

Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK.

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....\$5.00
Canada.....6.00
Foreign Countries (excepting daily editions).....8.00
Single Copies.....15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention daily issues, North America, \$1; foreign, \$2.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,650 copies were printed; that of these 8,650 copies 7,360 were mailed to regular paid subscribers to the weekly edition, 172 were provided for counter and news companies' sales, 972 were mailed to advertisers, exchanges and correspondents, and 146 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 303,650, an average of 9,201 copies a week.

The RAILWAY AGE GAZETTE and all other Simmons-Boardman publications are members of the Audit Bureau of Circulations.

VOLUME 59

AUGUST 13, 1915

No. 7

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*Illustrated.

"Every employee competent to hold his job three months knows when his work is 100 per cent." These words, in a brief paper by B. A. Porter, superintendent of the Memphis division of the Yazoo & Mississippi Valley, from which an extract is printed in another column, contain an important truth which is often lost sight of. Its corollary is that the negligent or wrong-headed employee knows his fault, or his breach of loyalty, or his failure to do as well as he knew how; and that in most cases when he

is pleading ignorance or is trying to throw the blame on some other person he knows that he is raising a false issue. In other words, conscience is an important element in discipline. The superintendent or other superior officer who succeeds in getting the co-operation of the conscience of a delinquent or untrained employe has taken the best possible means of leading that employe toward the highest efficiency of which he is capable. "One hundred per cent is the mark to be attained," says Mr. Porter. Everybody agrees to this, in words. To exemplify it in acts often requires the most strenuous effort on the part of all concerned—energetic team work. And success in team work is greatly promoted when every individual puts aside all pretense, makes no claim to 100 per cent when he knows that the right figure is 90, and frankly estimates his own work on exactly the same basis that the superintendent estimates it. This is the way to cultivate high ideals; and high ideals—of our own, not those of the general manager, or of the safety-first committee—are essential to real proficiency.

The employment of women as ticket sellers is not a new thing, especially at small stations, but the Oregon-Washington Railroad

Women

as

Ticket Sellers

& Navigation Company has taken a new departure in employing women in large city ticket offices, one each in four offices. Here they will be required, not merely to hand out a 15-mile card ticket now and then to a farmer, but will have to keep themselves posted in all the intricate details of the passenger traffic department. The general passenger agent's announcement says that his purpose in these appointments was to smooth the way for women customers. Possibly also by working with the women the men clerks will become more proficient in making things pleasant for all customers. Encouraging employees to learn from other employees who are of different temperament is a neglected element in railroad discipline. Men in city ticket offices already stand (or should stand) at the head of the class in courtesy; but the best of us can improve, of course. Copying the best habits of our fellows is a rule which can be applied in all departments. According to the Knoxville *Sentinel*, President Fairfax Harrison, of the Southern Railway, at a big employees' meeting in Knoxville, recently, in urging all employees to aspire to the most honorable records, mentioned by name, as worthy of emulation, a conductor and an engineman who had been among the speakers at the meeting. Why is not this a good idea? An employee who is thus made prominent may have conspicuous faults; most of us have a bunch of them. But the point is that good habits and actions are worthy of imitation, notwithstanding.

The description of a bridge to be built by the Chicago, Burlington & Quincy at Kansas City, published on another page of this

Alloy Steel

in Railroad

Bridges

issue, is of particular interest because of the use of high elastic limit alloy steel in a structure of moderate size. The specifications for the metal follow very closely those used for the Metropolis bridge of the same road over the Ohio river, a structure involving four spans more than 500 ft. in length and one 723 ft, long, the longest simple span in the world. In this structure, as well as any others which have unusually long spans, the dead loading becomes a very serious problem. The weight of the truss members becomes such a large proportion of the total load that any reduction of the sectional areas to effect a corresponding reduction in the weight is highly desirable. This has led to the use of the harder, stronger alloy steels, the additional cost of manufacture and fabrication resulting from the increased hardness being more than compensated for by the saving in weight. These special steels have been specified for a number of other bridges under construction at the present time, among which may be mentioned those at Memphis, Quebec and Hell Gate. Nickel steel has been most commonly used, although a high carbon steel is being used in the Hell Gate arch and silicon steel has been

specified for the riveted members of the Metropolis and Kansas City bridges. While these structures collectively represent a large tonnage, when compared with the total weight of all structural steel being fabricated, the percentage of the special steel used is still very small. At the present time any contract for a bridge involving the use of hard steel creates a special problem for the fabricating shop, requiring special equipment and increased supervision. It will be interesting to watch the extent to which future developments in the use of these harder steels will reduce the difference between the actual costs of the fabricated structures of hard and soft steel and permit the use of these special materials for spans shorter than have heretofore been assumed to be economical.

STEAMSHIP AND RAILWAY ACCIDENTS

ACCIDENTS on the railways of the United States are too numerous, but when something suggests comparison between their accident record and the records of other classes of concerns in this country the record of the railways is seldom found to be so bad relatively as most people think. When the lake steamship Eastland turned over in the Chicago river recently about 1,000 passengers were drowned. Never in their history did all the railways of the United States together kill that many passengers in all ways in a year. In only two years of the last ten has the federal inspection service compiled the statistics of steamship accidents so as to show separately the number of fatalities to passengers. These were 1906 and 1914. In 1906 American steamships carried 330,235,959 passengers, of whom 323 were killed in accidents, or 1 in 1,022,000. In the same year the railways carried 797,946,116 passengers, of whom 359 were killed, or 1 in 2,222,000. The railways killed less than one-half as many passengers in proportion as the steamships. In 1914 the steamships carried 318,094,317 passengers, of whom 105 were killed, or 1 in 3,029,000. In the same year the railways carried 1,053,138,718 passengers, of whom 265 were killed, or 1 in 3,978,000. Here again the railways were relatively the safer.

These statistics relate only to "disasters" to vessels, which really should be compared with train accidents. In 1906 the railways killed only 146 passengers in train accidents, or 1 in 5,465,000, and in 1914, only 85, or 1 in 12,390,000. The risk of a passenger being killed in a train accident is several times less than the risk of his being killed in a vessel disaster. The total number of passengers carried by the steamships in the 10 years 1905-1914, inclusive, was 3,388,654,368, and the total number of both passengers and members of crews killed was 3,972. The total number of passengers carried by the railways was 9,252,160,740, and the total passengers and employees killed was 8,832. The steamships carried only 36.6 per cent as many passengers, and killed 44.7 per cent as many passengers and employees as the railways. It is not pretended that these statistics are strictly comparable. In view, however, of the fact that it appears to be commonly assumed that travel by water is safer in this country than travel by rail, they are interesting.

It should also be considered in this connection that steamships have been supposed to be subjected to the strictest regulation in the interest of safety by the federal government. Since government regulation cannot prevent such steamship disasters as the General Slocum and the Eastland catastrophes, it is evident that the confidence of the public that it will greatly improve the operation of railways and other concerns is based on hope rather than on experience. There are still to be found people who can observe and remember, and who are therefore about as willing to trust their lives and limbs to such private greed as was manifested by the owners and managers of the Eastland as to government bureaucratism, red tape and general inefficiency.

Our governments need improvement fully as much as the business concerns they are so busy instructing in the ways of virtue and efficiency.

OUR INEFFICIENT GOVERNMENTS

IN political matters the members of the great American democracy are supposed to be the wisest people in the world. There are certain things about government, however, which they have never learned and show very little disposition to learn. Among these are that the quality of government and the benefits it confers on the public depend only slightly on the number of laws passed, and very largely, indeed, on the kind of laws passed and on the efficiency with which they are administered and enforced; and that the kind of laws passed and the way they are administered and enforced depend mainly on the organization of the government and the efficiency of its personnel.

The fact that the American people have never learned, or at least have never acted in accordance with these important principles, is forcibly impressed on the mind by some event every day. One recent event which should have called it to the attention of everybody was the sinking of the steamship Eastland in the Chicago River, and the consequent drowning of about 900 people. Federal legislation has provided for the regulation and inspection of steamships in the interest of public safety. It has created a bureau, which is now a part of the Department of Commerce, for the performance of these functions. The public has assumed that the legislation is adequate and the bureau efficient. But although the law applied to the Eastland, and it had been inspected by the bureau repeatedly over a long period of years, the boat actually turned over in 20 feet of water while still tied up at her dock.

Those responsible for the administration of the law now say that it is, and always has been, inadequate in that it does not provide for testing the stability of vessels. It is perfectly evident that either the law is inadequate or that its administration has been inefficient. But for the steamship inspection service to say that the law is inadequate or even to demonstrate that this is the case, is not to exculpate the government, but merely to "pass the buck" from one branch of the government to another; from the administrative department to the legislative. If the law is inadequate this is due to the inefficiency of Congress as a law-making body. If it is adequate the failure to so administer it as to prevent this catastrophe was due to the inefficiency of the steamship inspection service. And a pertinent question suggests itself here. If the law is and always has been lame in such an important particular, the steamship inspection bureau ought to have known it. If it knew it, it should have brought the matter to the attention of Congress and recommended a needed amendment. Where is the evidence that it did this? It has not been forthcoming.

There is constant agitation for increases in the functions of government. This agitation is directed especially to making the intervention of the government in industrial and economic affairs more energetic and pervasive. There are abuses in the railway and other lines of business, and people leap from the premise that these abuses exist to the conclusion that government regulation will improve conditions. But there is a hiatus in their logic, as is easily shown by putting it into syllogistic form. Their reasoning put into this form is as follows:

Major premise: There are abuses in business and evil industrial and social conditions result.

Minor premise: The government is competent by means of regulation to remove these abuses and remedy these bad conditions.

Conclusion: Therefore, the government should regulate business.

The major premise is unassailable. But the conclusion does not truly follow from it because the minor premise is fallacious. It is not that government as we have it, and always have had, is competent to regulate business. In almost every case where it has attempted to do so it has shown its incompetency. Based on past experience we ought to make the minor premise read: The government is incompetent by means of regulation to remove these abuses and remedy these bad conditions. We should then come

nearer stating the facts, and the conclusion at which we should arrive would be entirely different.

The science which deals with the subject of economics formerly was called "political economy." It is now usually called "economics." We need to return to the old phraseology for both theoretical and practical reasons. In our analysis of and in our action regarding all matters falling under this general head, we need to recognize the fact that the effect which will be produced by the intervention of government in business affairs depends not only on the conditions in business, but also on the fitness of the government to deal with those conditions. Its fitness, in turn, depends on its organization and its personnel. Our governments have thus far shown themselves incompetent to regulate business in the interest of the public, because in honesty and disinterestedness of purpose they are not superior, and in organization and personnel they are far inferior to the business concerns which they are regulating.

We have had much agitation, not only for increasing the interference of government with business, but even for government ownership and operation of many kinds of concerns. When shall we have an honest, energetic and widespread movement for making our governments competent to perform the functions they already have? Raising them to this plane of efficiency is absolutely prerequisite to raising them to the still higher plane of efficiency where they will be fit to perform large and important additional functions. The advocates as well as the opponents of further increases of government functions ought to be able to unite in such a movement; for by far the strongest argument at present against further increases of government functions is the almost imbecile inefficiency which most of our governments display in most of the things that they now undertake.

THE DIVISION OF RAILWAY INCOME

THE complaint is heard constantly from social reformers, politicians and representatives of organized labor that labor does not receive in wages its fair share of the product of industry or of the increase of that product. Just what is labor's fair share has never been theoretically determined by anybody except the socialists, who claim that it creates all wealth, and therefore should have it all. As a practical matter, the facts show both that labor receives a very much larger part of the product of industry than capital, and that the part it receives is increasing in proportion.

We publish elsewhere a very interesting letter from W. A. Worthington on this subject. He calls attention to a recent report of the National Civic Federation showing that at the present time labor is receiving practically two-thirds of the product of manufacturing industries and capital one-third. He then analyzes the distribution of that part of railway income which is divisible between capital and labor. He finds that of this divisible income labor, in 1904, received 58.73 per cent, and in 1914, 66.04 per cent, while capital in the former year received 41.27 per cent, and in 1914 only 33.96 per cent. Of the increase of the divisible income between 1904 and 1914, labor received \$555,823,662, or four-fifths, and capital \$131,593,690, or one-fifth. The increase in the part of the divisible income going to the railways is shown to have been sufficient to pay a return of only 2.43 per cent on the increase in their investment in road and equipment.

This last figure raises the serious question whether labor did not receive too much of the increase in the divisible income, or what comes to the same thing, whether capital did not receive too little. The increase in the investment of capital is what creates the increase in the demand for labor; and, if capital, when invested in any business, is not adequately remunerated, it will cease to be invested in that business, and thereby the increase in the demand for labor in that business will be arrested. To a certain extent this is what has been happening in the railway industry. The decrease in the reward of

capital invested in railways has caused a marked reduction in recent years in the amount it invested; and in consequence the number of men employed on railways is no larger now than it was eight years ago.

Increases in wages are an unmixed blessing to labor only when they do not encroach on a reasonable return to capital. When they begin to do that, as they already have done in the railway business, they cause periods of retrenchment and of slowing down in the rate of investment which throw men out of employment, thereby nullifying the advantages derived by labor from the advances in its wages.

AN OBSTACLE TO JUST PROMOTION

THE promotion of employees or the selection of candidates for subordinate executive positions becomes a difficult problem whenever an organization assumes such proportions that the individual directly responsible for results cannot know personally the rank and file. It is all the more difficult in a complex organization, such as that of a railroad, and the situation is much the same with all large corporations. This matter has been discussed frequently, but there is one obstacle to the selection of men for promotion which apparently has never been squarely met. Whether or not any system of credits or personal records is in use, the executive responsible for the promotion of men is dependent upon the immediate superiors of the candidates for promotion for the data upon which to base his decisions. This being the case it is well to consider whether the interests of the company always coincide with those of the immediate superior when the promotion of a subordinate is under consideration, and whether under such circumstances the recommendations or reports of the officer may be influenced by his own interests in the matter.

It is frequently said that a man who becomes a successful station agent in a given town is destined to remain there for the rest of his life, for, having once established himself in the good graces of the community, the interests of the company might suffer should another man replace him, in the event of his promotion to a larger or more important station. In a similar manner we find that the department head suffers no little inconvenience from any change in his organization, a result which he feels more keenly when an assistant is taken out of his department. In other words, he finds every inducement to keep his assistants in their respective positions as long as possible, particularly when he cannot advance them in his own department. Furthermore, his superior officer may be of such a disposition that he may feel he does not dare give him a personal knowledge of his subordinates for fear that his department will be disrupted by the superior officer dealing with the subordinates directly. Many an unfortunate man has been put in this intolerable situation.

On the other hand, it frequently happens that a man has outgrown his job, and is having his "light hidden under a bushel" simply because his superior is not as big a man as he is, and he cannot be moved up until his superior is eliminated. How, then, are we to make it to the interest of the superior to call special attention to a subordinate who is possessed of such qualifications as to justify advancement faster than his boss? In the first place, the integrity of the organization must be maintained. No matter how capable the subordinate may be, until such time as he is actually promoted he should not be favored by attention or clothed in authority which would be a source of embarrassment to his superior. Further than this, every effort should be made to avoid humiliating the man over whose head he is advanced. In fact, special attention should be drawn to the credit due him for having developed and trained the man promoted. The importance of this subject justifies a serious study of a method of proper reward for those men who have shown an interest and an aptitude in the development of the workers under them.

LEHIGH VALLEY

THE Lehigh Valley operates 1,442 miles of road, of which 595 is double track. The Lehigh Valley Railroad Company owns directly but 317 miles, 99 of this being the main line from Phillipsburg, N. J., to Wilkes-Barre, Pa. It owns, in addition, the entire capital stock of the Lehigh Valley Railroad Company of New Jersey; the Pennsylvania & New York Canal Company, and the Lehigh Valley Railway Company, whose main lines with its own give it a route from Buffalo to New York, 446 miles in length. It also operates the Lehigh & New York, having an aggregate mileage of 115, under lease. The company traverses the anthracite coal regions of Pennsylvania and no less than 45 per cent. of its total operating revenues in the year just closed were derived from the carrying of coal and coke.

In the fiscal year ending June 30, 1915, the road's total operating revenues were \$42,526,000, or \$355,000 more than in 1914, there having been an increase of \$668,000 in coal freight revenue, an increase of \$464,000 from other freight, but a decrease of \$751,000 in revenue from the carrying of passengers. Operating expenses totaled \$29,947,000, a decrease of \$141,000 from 1914, there having

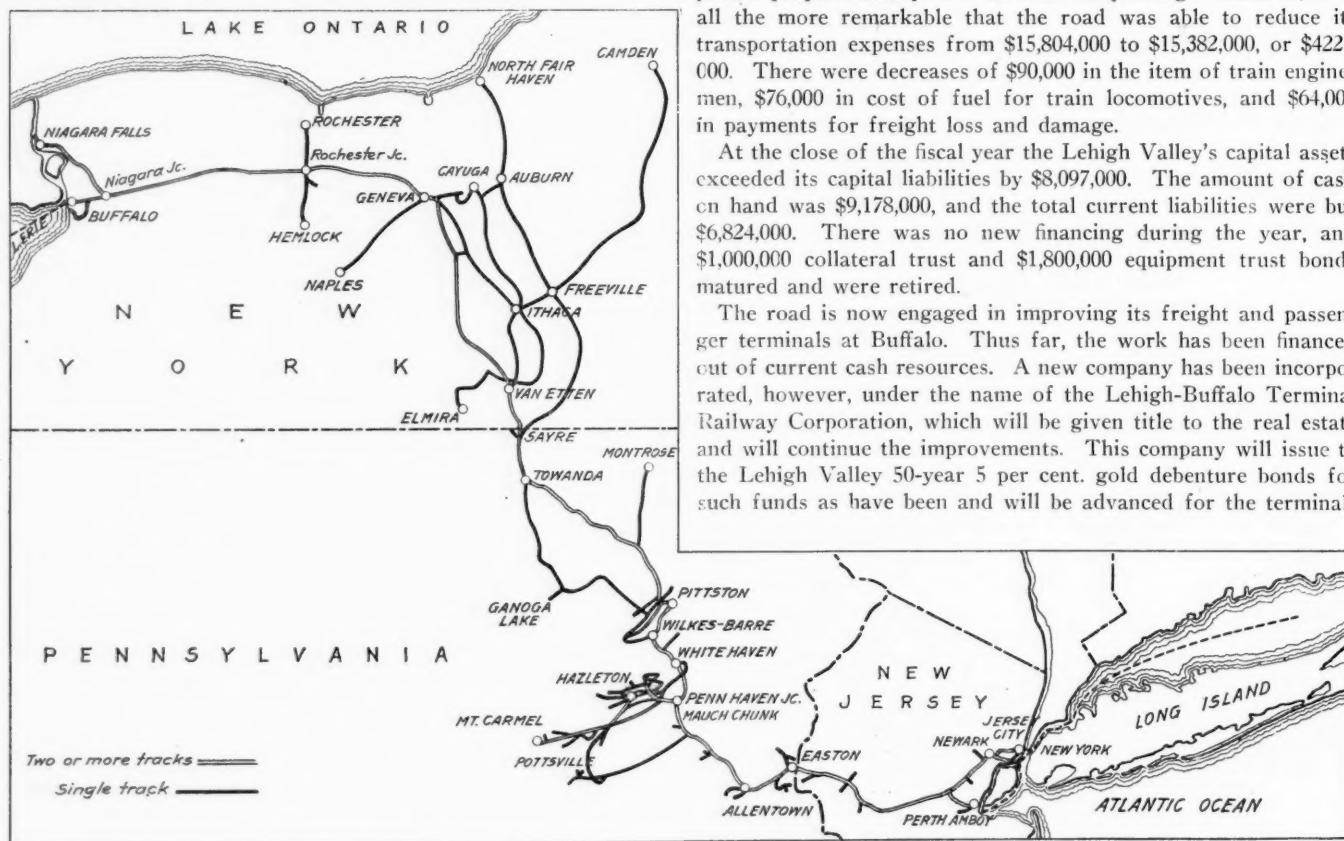
increase of 495,000 tons, or 1.66 per cent over 1914. Of the total tonnage carried, 14,603,000, or nearly one-half, was anthracite coal, there having been an increase in this commodity of 1,038,000 tons. The total ton mileage was 5,326,329,000, an increase of 2.70 per cent. The revenue per ton per mile was .661 cents, as compared with .657 cents in 1914. The ton mileage per mile of road was 3,690,000, an increase of 2.45 per cent, and the freight revenue per mile of road was \$24,386 as against \$23,660 in 1914, an increase of 3.07 per cent. There was but a slight change in the average train load, it being 621 tons.

The passenger revenue in the year just closed was \$4,044,000, or 15.67 per cent less than in 1914. This drop is attributed to the general depression and to the reduced immigrant traffic, of which the Lehigh Valley has received a large share. There were decreases not only in the number of passengers carried, but in the average journey and the average revenue per passenger. The passenger train revenue per mile of road was \$2,801, as compared with \$3,330 in 1914.

In view of the fact that there was an increase in freight traffic and that it is exceedingly difficult to decrease passenger train expenses proportionately to a decrease in passenger business, it is all the more remarkable that the road was able to reduce its transportation expenses from \$15,804,000 to \$15,382,000, or \$422,000. There were decreases of \$90,000 in the item of train engine-men, \$76,000 in cost of fuel for train locomotives, and \$64,000 in payments for freight loss and damage.

At the close of the fiscal year the Lehigh Valley's capital assets exceeded its capital liabilities by \$8,097,000. The amount of cash on hand was \$9,178,000, and the total current liabilities were but \$6,824,000. There was no new financing during the year, and \$1,000,000 collateral trust and \$1,800,000 equipment trust bonds matured and were retired.

The road is now engaged in improving its freight and passenger terminals at Buffalo. Thus far, the work has been financed out of current cash resources. A new company has been incorporated, however, under the name of the Lehigh-Buffalo Terminal Railway Corporation, which will be given title to the real estate and will continue the improvements. This company will issue to the Lehigh Valley 50-year 5 per cent. gold debenture bonds for such funds as have been and will be advanced for the terminals



The Lehigh Valley

been an increase of \$538,000 in maintenance of equipment expenses and decreases of \$191,000 and \$424,000 in maintenance of way and structures and in transportation expenses, respectively. The operating income for the year was \$10,875,000, an increase of \$451,000 over 1914. Other income, however, decreased no less than \$1,074,000 and was \$1,942,000. This was the result of a reduction in hire of equipment from a credit balance of \$325,000 to a debit balance of \$69,000, a decrease of \$394,000, and a decrease of \$528,000 in dividend income brought about by the inclusion of the Temple Iron Company's dividend of \$685,080 in the 1914 figures. This decrease was reflected in the net income, which was \$6,322,000, or \$734,000 less than in the previous year. The net income, nevertheless, was sufficient to pay the usual 10 per cent dividends, amounting to \$6,060,800, and there was merely a slight decrease in the credit balance of the profit and loss account from \$23,899,000 on June 30, 1914, to \$23,693,000 on June 30, 1915.

In 1915 the total tonnage of revenue freight was 30,269,000, an

and the bonds will be kept in the Lehigh Valley's treasury. Application is now pending before the New York Public Service Commission, Second District, for permission to issue these bonds. The improvements at Buffalo include a new passenger station, the construction of which was recently begun, a new freight station, which, it is expected, will be completed by November 1, and a new steel and concrete coal dock, having a capacity of 500 cars in 10 hours, which will be ready shortly.

The Lehigh Valley has been considered fortunate in the matter of terminals in New York harbor. It is now building a new 1,060 ft. dock, equipped with modern ore handling machinery, at Constable Hook, near Bayonne, N. J., on New York Bay. This dock will be completed early next year and will be in a position to receive foreign ores from vessels of 35-ft. draft for furnaces at South Bethlehem and other places in the Lehigh valley region. It also has under construction a new 730-ft. concrete and steel pier at the foot of Rector street, on the North river front of

Manhattan, which, when completed, will be one of the best railroad piers on the island. A two-story pier will be built at Pier 44, on the East river, primarily for handling flour. The company is also building a new hay pier at 149th street, and has leased all of Pier 5, Wallabout, Brooklyn, instead of one-quarter of it as formerly. These improvements will strengthen the Lehigh Valley in New York considerably.

The Lehigh Valley Coal Company, the entire stock of which is owned by the railroad, had a net income in the fiscal year just closed, from all sources after deducting charges for royalties, sinking funds, depreciation of property and interest of \$1,023,000, an increase of \$458,000 over 1914. It and its tenants mined 8,089,000 tons of anthracite coal, and 258,000 tons of bituminous. The company paid no dividends, but increased its surplus from \$4,226,000 on June 30, 1914, to \$5,108,000 on June 30, 1915.

The following table shows the principal figures for the operation of the railroad company in 1915 as compared with 1914:

	1915	1914
Mileage operated.....	1,444	1,444
Coal freight revenue.....	\$19,195,756	\$18,528,246
Merchandise freight revenue.....	16,005,501	15,541,886
Passenger revenue.....	4,043,799	4,795,147
Total operating revenue.....	42,525,962	42,170,647
Maintenance of way and structures.....	4,483,925	4,674,725
Maintenance of equipment.....	8,207,491	7,669,793
Traffic expenses.....	959,830	1,040,594
Transportation expenses.....	15,382,187	15,804,059
General expenses.....	913,955	898,734
Total operating expenses.....	29,947,388	30,087,905
Taxes.....	1,689,109	1,659,281
Operating income.....	10,874,683	10,423,461
Gross corporate income.....	12,816,895	13,440,150
Net corporate income.....	6,322,445	7,056,660
Dividends.....	6,060,800	6,060,800
Surplus.....	261,645	995,860

NEW BOOKS

The North Eastern Railway, Its Rise and Development; by W. E. Tomlinson. 820 pages, 246 illustrations, 7 in. by 10 in. Bound in cloth. Published by Andrew Reid & Co., Ltd., and Longmans, Green & Co., London. Price \$7.50.

This is an exhaustive history of the various stages of the development of what is now the North Eastern Railway of England, which is especially interesting because one of its component parts was the Stockton & Darlington Railway, the first railway operated with steam locomotives in the world. It thus constitutes in a measure an epitome of railway progress, inasmuch as it affords an opportunity of following within the limits of a single railway system every step in the evolution of transportation by rail, from the horse-drawn coaches and trucks which were run over the wagon-ways prior to 1825, to the electrically operated trains of the present day, for the North Eastern still retains as an integral part of its system portions of some of the early wagon-ways that were used for the transportation of coal.

The plan of the work embraces a brief account of the work done on the early wagon-ways previous to the projection of the Stockton & Darlington, in the days of the experimental period of rail transportation, a chapter on early canal projects in the north of England, a history of the lines amalgamated in 1854 to form the North Eastern Railway and of the early lines which were afterwards absorbed by it, and a history of the North Eastern itself during the first 50 years of its existence, with an appendix giving a short summary of events from 1904 to 1914.

A considerable amount of space is devoted to the early history of the Stockton & Darlington, the early records of which, although this railway is the oldest in the world, the author says are practically complete.

In the preparation of the work the author has had access to special and official sources of information and he has thus been able to present a wealth of interesting detail on the various vicissitudes of early railway planning and building, as well as on the more modern development. Special features are the descriptions of the equipment and methods of operation at different periods, as well as of objects of engineering interest. The 246 illustrations, including maps, diagrams, portraits and views showing the engineering features of the older railways, are unusually interesting and represent a long and patient search, many of them being reproductions of rare prints. The book should be of very great value to all students of railway history.

Letters to the Editor

CREDIT MARKS FOR FREIGHT TRAIN MEN

CLEVELAND, Ohio.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The comment of "H. S. M." in your issue of June 25, on the method of recognizing efficient movement of train crews, that has been adopted by Mr. Lechlides, superintendent of the Baltimore & Ohio, is answered by the statement that the system does, in fact, give recognition to men whose records do not need "clearing up."

Indeed, this is one of the most encouraging features. The men are encouraged to preserve these records, or personal letters that are sent out by Mr. Lechlides for the express purpose of preventing a demerit record. Something will happen, which, on its face seems to indicate that discipline should be administered; or there may be a case of honest doubt; this system makes it unnecessary to leave the decision to hit or miss. The employee has the documents showing that in previous cases, at least, he has acted in the best interest of the company's welfare. This is something more substantial than a book entry.

Railroad men do take pleasure in performing their duties in conformity to the rules and standards of their employers. A clear record is an employee's best friend.

C. H. LEE.

PHILADELPHIA, Pa.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your correspondent, "H. S. M.," evidently does not know to what extent the "credit" system is used on a number of railways. On the Baltimore & Ohio credit marks are given for any unusually meritorious service. On the Philadelphia Division we have recently started a practice of making credit entry on the record of the engineer who gets the best results as to time and tonnage, i. e., those who produce the largest number of ton miles per hour. Consideration, of course, is given to different conditions prevailing in different kinds of service. * * *

P. C. ALLEN,

Superintendent, Philadelphia Division.

AN AMERICAN FIREMAN IN FRANCE

PARIS, France.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The arbitration of the enginemen's and firemen's demands in America has interested me greatly. As you say, their principal argument is that their earning power has increased because of the greater efficiency of the locomotives, but I wonder if they would have refrained from asking an advance in wages if their productive power had not increased because many ancient locomotives had been kept in service, and comparatively few modern ones added, as is the case on the Continent?

I am now engaged in firing on the French State Railways. A comparison of the working arrangements and wages in France and the far better working conditions in the United States may be of interest. To begin with, there is no overtime in France, nor is there any 16-hour law. An engineman might be on duty 24 hours; he would have to remain on duty until he had finished his run, and he would not receive a cent of overtime. Payment in road service is by distance, and in switching service by the day of 12 hours, two hours being allowed for the mid-day meal. Coal premiums, figured on a ton mile an hour basis, are paid to engineers and firemen. Fines are imposed for losing time if the crew is to blame, and a bonus is paid for making up time. Nearly all freight trains, including extras, are run on schedules. Engineers of fast expresses make (including premiums) up to 600 francs (\$120) a month, and firemen up to 300 francs (\$60), but their work is double that in the United States. For example, divisions up to 150 miles are doubled every day, the men frequently being on duty 13 to 14 hours. One day off in every 10 is given in any class of service.

The fireman has to clean the fire. At the end of the run

he has to clean out the smokebox, where two barrels of cinders usually collect, clean out the ash pan, which is flat and not self-cleaning like those in America, fill the sandbox (the sand usually has to be carried in buckets from the sand-house), and clean the entire engine, including the polished steel motion work, but not the wheels. The tender is not cleaned and the contrast of a clean engine and dirty tender is peculiar. Inside motion (most of locomotives being of the four-cylinder type) is not cleaned, with the result that the engineer gets a nice oil, grease and dirt bath when oiling. The fireman has to spend fully an hour after coming in to fix up the engine, and it is evident that on a French engine he is the man behind the gun.

There are other things that might be mentioned, such as the poor protection afforded by cabs, the lack of seats and the bad arrangement of cab fittings. Arrangement is a misnomer—the fittings were never arranged—they just happened that way. The tenders are also very poorly arranged, and 75 per cent of the coal must be shoveled forward. A large number of the engines, including particularly those in freight and switching service, are old, having been built in the 'sixties, 'seventies and 'eighties, and have no other brake on the engine than the Le Chatelier water brake, and on the tender only a hand brake, which the fireman has to operate.

Other inconveniences could be mentioned, but these will suffice to show how splendid American working conditions are as compared with those here.

A peculiar arrangement here is that whereby, after 25 years' service, employees are retired on a pension of 1,500 francs (\$300) a year. This takes them away when they are at their best for railway work, and it makes one wonder what an active man of 45 or 50 would do with himself when released from service.

W. G. LANDON.

DIVISION OF RAILWAY INCOME BETWEEN CAPITAL AND LABOR

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The National Civic Federation has recently made public a preliminary report of its committee on the division of the people's income, which effectually controverts the assertion frequently made that labor is receiving an insufficient share of the product of industry and particularly of the increment in such product. The committee's report reaches the general conclusion that labor is receiving an increasing proportion of the product

all operating expenses, excepting labor, and all taxes, the amount remaining being the sum paid for labor, and the sum left for capital applicable to interest on bonds or other debt, dividends, improving property out of income, depreciation, which may not be included in operating expenses, other miscellaneous expenses, and surplus.

The accompanying table shows these results for the fiscal year ending June 30, 1914, as compared with 1904, also the changes which have taken place during this ten-year period. From these statistics the following conclusions may be drawn:

1. Of the divisible railway income labor is now receiving 66.04 per cent., whereas ten years ago it received 58.73 per cent. Capital is receiving for itself and for the other purposes mentioned only 33.96 per cent., as compared with 41.27 per cent. received ten years previously.

2. The return to capital last mentioned represents only 4.17 per cent. upon the railway investment in 1914, whereas this return was 4.99 per cent. in 1904.

3. Comparing 1914 with 1904, there was an increase of \$687,417,352 in railway income available for paying labor and for capital purposes. Of this amount \$555,823,662, or 80.86 per cent. was paid to labor, and only \$131,593,690, or 19.14 per cent. of the total remained for capital purposes. This shows that of the increment in divisible net income during the ten years, labor received four-fifths and capital only one-fifth. As compared with the latter the investment in road and equipment increased \$5,425,160,709, the increment available for capital purposes being only 2.43 per cent. upon the increased investment.

4. As compared with this inadequate return to capital it will be noted that the increase of \$555,823,662, or 67.98 per cent. in payments to labor was accompanied by an increase of only \$399,362, or 30.81 per cent. in the number of employees on June 30. This number may not correctly represent the average number of employees during the entire year, but it is a sufficient indication of the very large increase of payments to labor per individual.

5. Whilst returns to capital were greatly reduced through the necessity of larger proportionate return to labor, they were further reduced by the increased share given to the government as taxes, which increased \$78,835,221, or 127.78 per cent.

6. The statement shows that public services rendered by the railways increased during the ten-year period 60.83 per cent. as to passenger service, and 65.21 per cent. as to freight service, for

	—Year Ending June 30.—		—Increase, 1914 over 1904.—	
	1914.	1904.	Total.	Per cent.
1. Operating revenue	\$3,047,019,908	\$1,975,174,091	\$1,071,845,817	54.27
DEDUCTIONS.				
2. Operating expenses, except wages.....	\$826,890,687	\$521,297,443	\$305,593,244	58.62
3. Taxes	\$140,531,575	\$61,696,354	\$78,835,221	127.78
4. Total deductions for items 2 and 3.....	\$967,422,262	\$582,993,797	\$384,428,465	65.94
5. Net revenue available for wages and other purposes.....	\$2,079,597,646	\$1,392,180,294	\$687,417,352	49.38
DISTRIBUTION OF ITEM 5.				
6. Expended for wages to labor.....	\$1,373,422,472	\$817,598,810	\$555,823,662	67.98
7. Remaining for return on investment of capital, depreciation of road, miscellaneous items, and for improving property out of income.....	\$706,175,174	\$574,581,484	\$131,593,690	22.90
8. Percentage of net income paid to labor.....	66.04%	58.73%	7.31%	12.45
9. Percentage of net income for capital and other purposes.....	33.96%	41.27%	d 7.31%	d 17.71
10. Investment in road and equipment.....	\$16,936,697,840	\$11,511,537,131	\$5,425,160,709	47.13
11. Ratio of net available for capital, improvements, etc., to railway investment	4.17%	4.99%	d 0.82%	d 16.43
12. Number of railway employees on June 30.....	1,695,483	1,296,121	399,362	30.81
13. Mileage of railway operated.....	247,398	212,243	35,155	16.56
14. Public serv. perf. by rys.—number of passengers carried one mile....	35,258,497,509	21,923,213,536	13,335,283,973	60.83
15. Public serv. perf. by rys.—number tons freight carried one mile.....	288,319,890,210	174,522,089,577	113,797,800,633	65.21

Authorities:—1904 I. C. C. Statistics of Railways of United States.

1914 I. C. C. Press Bulletin of March 31, 1915, on 1914

Railway Statistics.

(d) Represents a decrease.

of industry, and that at the present time practically two-thirds of the product of manufacturing industries go to labor and one-third to capital.

In this connection, for the purpose of comparison, an interesting study may be made of the distribution of the net railway income to labor and capital, bearing in mind that railway operation requires an extremely large investment of capital for fixed plant and equipment in proportion to the income received.

From the statistics of railways of the United States, published by the Interstate Commerce Commission, this may be ascertained by first deducting from the gross operating revenue

which the railways received 54.27 per cent. additional gross revenue, paid out 58.62 per cent. more for operating expenses, other than wages, but paid in wages 67.98 per cent. more, and for taxes 127.78 per cent. more, the result of the undue increase in the latter items being to reduce the increased return for capital purposes to an increase of only 22.90 per cent. This is much less than the railways had a reasonable right to expect, and is entirely inadequate to reimburse them for the increase of 47.13 per cent. in investment in road and equipment.

W. A. WORTHINGTON.

Vice-President and Assistant to Chairman Southern Pacific Company.

Underground Cable on the Pennsylvania Railroad*

Railroad Telegraph and Signal Wires Absolutely Protected from the Storms for a Distance of Twenty Miles

By I. C. FORSHEE

Electrical Engineer, Telegraph Department

The Pennsylvania Railroad has this year completed an underground cable installation, including the telephone, telegraph and signal cables, on the New York Division, from Jersey City, where the division offices are located, to Rahway, a suburban point about twenty miles west on the main line toward Philadelphia. This important improvement was decided on after the very severe sleet and wind storm on that division in March, 1914, extending over a distance of seventy miles. This was not the first severe sleet storm which had given impetus to the underground movement, as the memory of the very disastrous storm during the inauguration of President Taft in 1909 was still fresh in the minds of all the officers interested in passenger train movements, and the importance of having at such times reliable telephone or telegraph communications, as well as an operating signal system, played its part in the decision in favor of an underground system.

REASONS FOR UNDERGROUND CABLE.

The following are factors considered in favor of this type of construction:

- (1) Importance of continuous wire service, including train

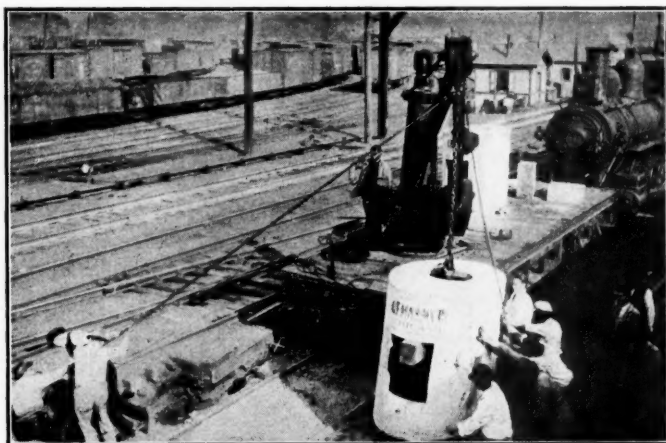


Fig. 1—Monolithic Concrete Manhole

despatching, block, message and way station telephone and telegraph circuits and automatic block signal circuits.

- (2) Freedom from sleet, wind and lightning.
- (3) Improvement in the appearance of the right of way.
- (4) Absence of poles in congested yards, where clearances are small.
- (5) Freedom from interruptions to traffic due to broken poles and wires falling across the track.
- (6) No danger that failures will cause crosses with high tension crossings; freedom from this hazard to property and life.
- (7) Not subject to troubles from induction caused by parallel high tension A. C. power circuits to as great an extent as overhead lines.
- (8) Less liable to interruption in the event of derailments.

IMPORTANCE OF SERVICE.

The importance of communication with New York and Jersey City from Trenton and Philadelphia may be understood when one considers that the general offices of the company are located at Philadelphia, company shops and an important transfer point at Trenton, the New York Division offices at Jersey City, and the

Manhattan Division offices at New York. The telephone and telegraph circuits are owned and operated by the railroad company, but there are also Postal Telegraph wires on the line.

There is a total of 250 passenger trains and 150 freight trains each week day over the section between Jersey City, New York and Rahway, and frequently 3,500 messages are sent over the wires in a day between Philadelphia, New York and Jersey City alone, not counting way-station business. Over the section between Jersey City and Summit Avenue (two miles), including the Hudson & Manhattan electric train movements, there is a total of 950 trains a day, and 500 passenger trains over the section between New York, Jersey City and Newark.

The pole lines which were replaced by the underground, had a varying number of wires to provide for the local and long distance service. In the congested districts the local circuits were in cable, and the trunks were open wires. The heaviest line was a line across the Jersey Meadows on "H" poles, where there were 112 open wires and two or three cables. For the greater part of the distance to Rahway a total of 70 aerial wires of No. 9 B. & S. and No. 8 B. W. G. copper, and signal wires on two lines of poles, were replaced by the underground.

DUCT CONSTRUCTION.

The conduit line decided upon was a six duct multiple, with manholes spaced not over 500 feet apart. Three-inch fibre duct was used and laid in concrete, with a minimum covering of two feet of earth.

The concrete, which was a 1-3-6 mix, was three inches thick in the base, three inches on sides and four inches on top, with a separation in the standard section of one inch between ducts, the arrangement being three ducts wide and two high. The thicker section was used on top to afford a better mechanical protection to the ducts and for a wider separation between the 2,300-volt A. C. signal feeders located on top and the telephone cables in the duct. A half-round section of three-inch fibre conduit was laid in the top layer of concrete, with the open side flush with the top, for the purpose of placing the 2300-volt signal wires. Two of these wires, which were stranded, rubber insulated and braided, were placed in the half-round section, where they were covered with hot pitch and protected with re-enforced concrete slabs, two inches thick, six inches wide and four feet long. At the manholes these wires were carried in trunking around the outside. It was not thought advisable to have the high tension wires in the same manholes with the other cables.

The trench was graded and the ducts laid true to line with a minimum grade of three inches per hundred feet, for drainage toward the manholes.

MANHOLES.

Manhole design and construction is a very important part of a satisfactory underground installation and a great deal of care and study was given to this item.

On account of the conditions in many locations, which made it necessary to place the duct and the manholes close to the high speed tracks, a special manhole was developed that was rather unique and which worked out very satisfactorily. These were of reinforced concrete, elliptical in cross section, cast in one piece, including the bottom, sides and top; and were provided with pulling-in irons, bolts for the cable racks, drain and openings for the entrance of the ducts. The covers were also of reinforced concrete, with protected edges. The shape of the manholes was such that very strong construction was obtained with minimum weight. They were allowed to season thoroughly before being placed. A wreck train derrick, or a hand derrick on a flat car was used

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for placing them, as shown in Fig. 1. The manholes were usually put in place ahead of the conduit, at the proper grade; so that when the conduit was laid up to them the concrete work could be finished without delay. One is shown in Fig. 2, in place, before the top layer of concrete is finished. An interior view showing the arrangement of ducts, with two pump log outlets for service taps, is shown in Fig. 3. The pump log ducts are run on top of the concrete. The size of the end openings of the manholes is such that the conduit, with concrete covering, is accommodated for nearly every condition of grade; so that it was not necessary to cut out any of these openings except for very unusual conditions. Forms were used inside and outside the manholes to give the proper finish and strength around the ducts.

SHORING AND REINFORCING.

On account of the narrow clearance between the high speed tracks and the duct line in many places, and the character of the soil, and of the banks, often mostly cinders, it was necessary to use tight shoring as shown in Figs. 2 and 4.

Through some sections where the conditions were not as favorable, half-inch or three-quarter-inch square reinforcing rods were used in the bottom and top tiers of concrete, as shown in Fig. 5. This also shows the special jacks used to support the shoring. Reinforcing rods were used when it was necessary to extend the duct run under tracks.

SPECIAL CONDITIONS.

Many special conditions exist on this installation that made it

plates and locked. Drainage openings underneath the duct were provided at intervals of about twenty feet to allow any water entrapped behind this construction to run out into the ditch. Expansion joints were also provided in the concrete, as it is exposed to the sun, and in the winter is many times covered with ice.

For a portion of the distance through this cut the cables are carried on messengers, supported from cable arms, attached to steel poles set in concrete. These are located in an old portion of the cut, through which trains were originally run, but which is now used as a storage yard. The cables are for the most part out of sight from passing trains.

On account of proposed changes in the track at one point, it was not feasible to locate the duct on the north side of the right of way, and there was a retaining wall on the south side on the right of way line, with not enough room between it and the ties for the conduit. The duct here was placed on top of the wall, which was in good condition.

STREET CROSSINGS.

There are numerous undergrade street crossings throughout this district, and at some of them it is proposed to renew the bridges before long. The type of crossing decided upon for these locations was to carry the cables from the ducts on messengers across the streets. The messengers were attached to eye-bolts anchored in the concrete surrounding the ducts, and located immediately over them, so that no additional splices in the cable were necessary on account of this construction. Manholes were usually

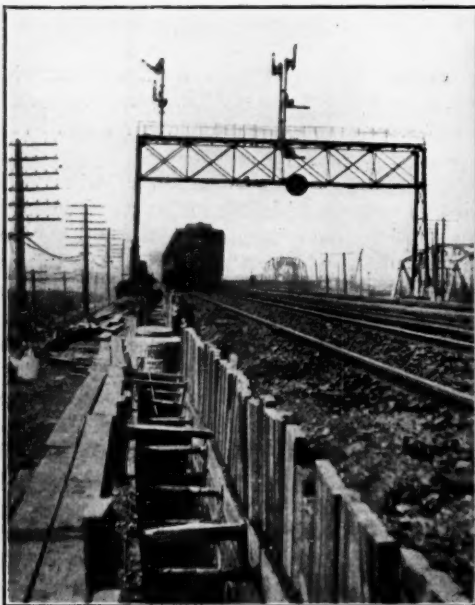
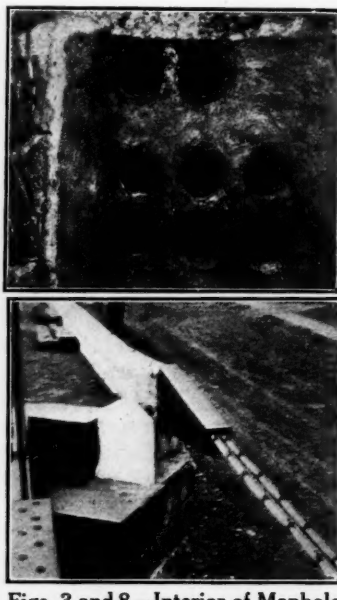


Fig. 2—Manhole and Duct in Place



Figs. 3 and 8—Interior of Manhole with Two Local Outlets. Conduit on Retaining Wall

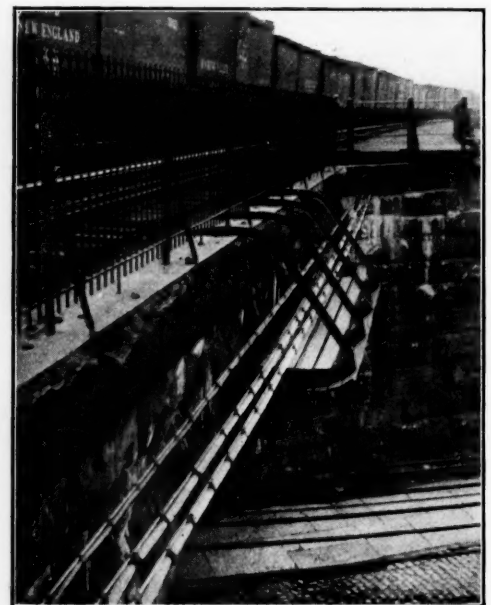


Fig. 9—Trolley Guard at Street Crossing

necessary to devise special construction which would be adapted for a permanent installation, as it cannot be as readily moved as a pole line. In this connection, the plans for any contemplated changes in the track layout were consulted.

One section for about a half mile, extends through Shanley Cut, near Summit Avenue Station, where the tracks lie in a deep trap rock cut. The face of the rocks on either side is very irregular, the tops of the banks on either side are likewise irregular and there are overhead street crossings to contend with. Trap rock is found only about a foot below the top of the ballast, and high tension lines for signal operation were in service here between the tracks. The location and type of construction decided upon for this section are shown in Figs. 6 and 7. Here the ducts were arranged two wide and three high on account of the limited space available between the edge of the half-round brick lined ditch and the rock cliff. Special splicing chambers were provided in these sections, placed on top of the surface, covered with steel

located close on each side of such a street crossing to facilitate matters in the event of the bridges being changed.

The construction on the retaining wall and across a street at an undergrade bridge, together with the method of protecting the end of the aerial cable from mechanical injury, is shown in Fig. 8.

PROTECTION FROM TROLLEYS.

At some of these crossings where aerial cable was used there were trolley lines running underneath. It was necessary to devise a satisfactory protection for the cables to prevent the trolley poles from accidentally hitting the cables, and to keep the cables from fouling the trolley. Such a scheme is shown in Fig. 9.

SUBMARINES.

Two sections of submarine cables, a total of about 2,100 feet, are necessary, and both are located in navigable streams at draw bridges. It was necessary to change the location of one of these and at the other it was necessary to have the channel dredged out to afford a safe covering.

TEST HOUSES.

On account of local conditions it was desirable to have the cables so arranged that the conductors would be accessible for testing and for changing the assignment of cable pairs. Two sizes of concrete test houses were used for this purpose, the large one being shown in Fig. 10. These were built of reinforced concrete, molded in one piece, except the door and ventilator, and made as nearly as possible fireproof. When these are associated with a tower for test purposes, they are so arranged that the cables can be cross connected without looping into the tower. Thus a fire in the tower would not cause any serious interruption

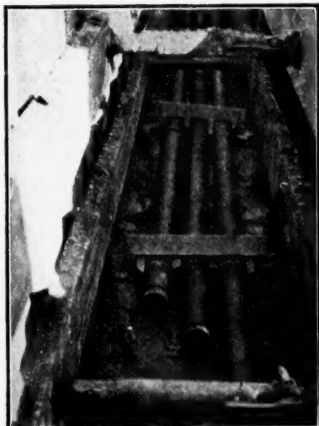


Fig. 4—Forms for Shoring, Spacing Combs and Plugs

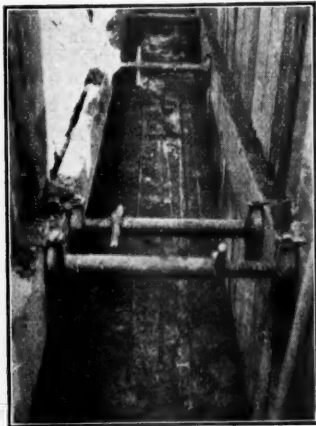
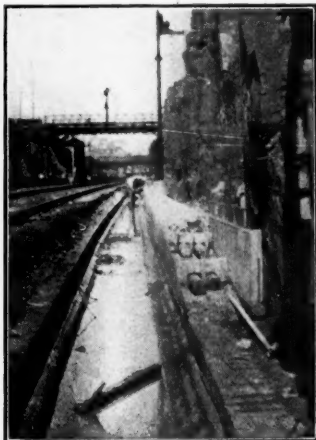
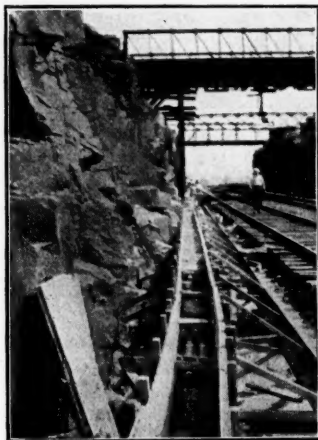


Fig. 5—Re-enforcing Bars in Bottom

in the telephone and telegraph service. They are provided with electric lights to facilitate the work and to dry out any condensation during unfavorable weather conditions. Only telephone and telegraph cables loop into these test houses, no signal wires entering them. There are nine test houses altogether.

COST OF CONDUIT.

On account of the many obstructions met in some districts, the nature of the soil, which necessitated careful shoring, the location of the duct with respect to the tracks, the frequency of the train



Figs. 6 and 7—Construction Through Shanley Cut

movements, causing much loss of time in some sections, the special construction, the difficulty in getting water, materials, and labor to the places required, and the careful inspection of all materials and workmanship, the costs would be of little value for comparison except for the same conditions. The cost per lineal foot of six duct multiple including excavation, conduit, labor, concrete, manholes, cable test houses, reinforcing material, work train charges, engineering and supervision was \$1.53, exclusive of cables.

CABLES.

Two paper-insulated lead-covered telephone cables are installed throughout. In one the most important through or trunk circuits are carried and in the other the local circuits. These are constructed with a number of different combinations to meet the conditions in different sections, but only three gages of conductors were used—Nos. 10, 13 and 16 B. & S. G.—and all twisted into pairs, with phantoms in all the combinations.

The local cable was provided with a paper-insulated lead-covered test pair in the center, which is in reality a cable within a cable. The maximum diameter of the cables is 2 17/32-inch, but no difficulty was met in pulling them into the three-inch ducts.

The cable was shipped from the factory in maximum lengths of 500 ft. A reel of cable set up and ready to be pulled in is shown in Fig. 11. This also shows the grip used, the cable protector for the manhole top, and the location with respect to the main track.

The conductor splices were all made with tinned copper sleeves and soldered.

The phantoms or quads were tested and connected to give a minimum of capacity unbalance and are consequently commercially free from cross talk between the physical circuits, between the physical and phantom circuits and between the phantom circuits.

A compressed air test was made on all sections of cable, each about a mile in length, to detect the presence of leaks at the wiped joints or between manholes. This was considered a very valuable test, especially on account of some of the cables being continuously under water.

The signal cables occupy only one duct and carry 110-volt A. C.



Fig. 10—Test House



Fig. 11—Reel of Cable Ready to Be Pulled In

for the local circuits. These are rubber insulated and braided, and are spliced and racked on the side of the manholes opposite the telephone cables.

Service taps for the signal system are carried in cypress trunking.

The work on the conduit began Aug. 20, 1914, and the last cable was placed in service in June, 1915. A longer time was required than otherwise would have been on account of a new fill east of Rahway, where it was not considered safe for the conduit line to be laid until the fill had settled.

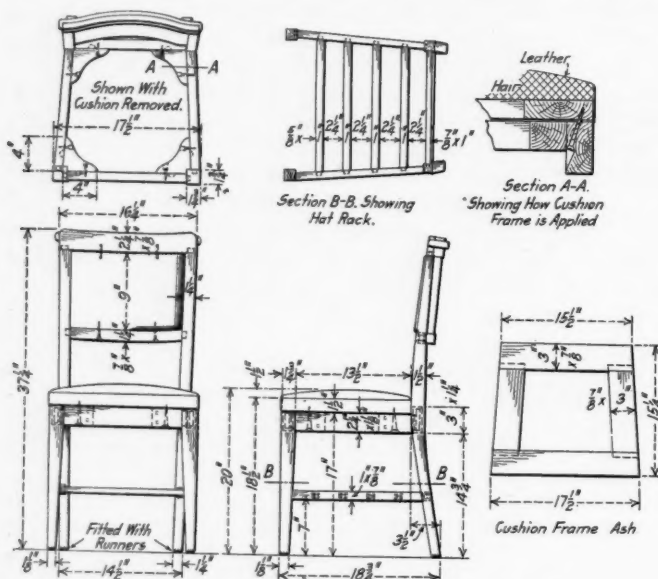
The poles have now all been cut down and the road presents a much improved appearance. The telephone, telegraph and signal services are all very satisfactory. Extensions of the system are already under consideration.

CASUALTIES AMONG BRITISH RAILWAY MEN AT THE FRONT.—

The London and North-Western Railway Company reports 1,603 casualties among the members of its staff who are serving with the colors. Of these 209 have been killed in action or drowned, 78 have died of wounds, etc., 80 are missing, 1,073 have been wounded, sick, etc. Of these 30 suffered from gas poisoning. Prisoners of war number 163. Of the 1,073 men disabled 630 have returned to duty. From the North-Eastern Railway Company 7,495 men have joined the colors; 103 have died.—*The Engineer*.

CHAIRS FOR DINING CARS

The Canadian Northern has been endeavoring to obtain a satisfactory design of chair for use in dining cars for five years, and out of seven different designs tried out in service during this



Chair Used on Canadian Northern Dining Cars

period the one shown in the drawing has proved much more satisfactory than any of the others.

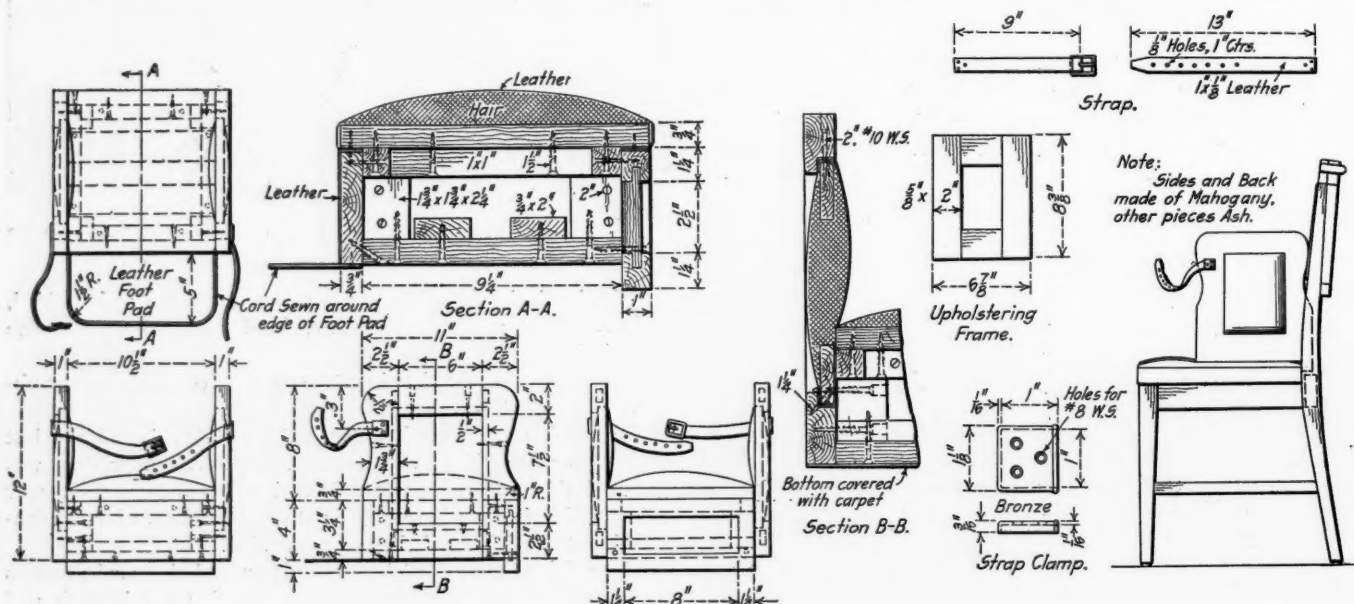
The principal weakness in most chairs is the difficulty of keeping the frames from racking loose. This has been overcome in the Canadian Northern design by bracing the legs by means of the hat rack. This is also appreciated by passengers, as it avoids the

chairs, the back of which forms the back of the combined chair. The designs for these chairs were worked out by A. L. Graburn, mechanical engineer of the Canadian Northern, Toronto, Ont., and have met with marked success in service.

NEW ACCIDENT REPORT FORMS

The Interstate Commerce Commission has adopted, after further revision, the forms for use in reporting railroad accidents monthly to the commission and the new code of regulations for making the reports, which were the subject of conferences with the railways last winter, and has ordered the adoption of the forms for the reports beginning with July 1, 1915. There are four principal forms, lettered V, T, F and R. Form T is on white paper, V on yellow, F on pink, and R on blue. Form T is to be used for all ordinary accidents. Form V contains the oath of the officer sending the report and a summary of non-train accidents. This summary must contain a statement of the total number of man-hours worked, during the month, by employees subject to casualties in the classes named. These classes are: Shopmen, stationmen, trackmen, bridge and building men, "other employees" and "all other persons." These non-train accidents—heretofore called industrial accidents—are to be divided into eleven classes according to their causes. Among these causes are: Working machinery; use of hand tools; flying particles; electric currents; falls of person; handling freight or supplies, and "miscellaneous industrial causes." Form F is a memorandum of fatalities developed from previously reported injuries. Each month a road must report, so far as known, all cases of persons who have been reported injured and who have subsequently died. Form R is a supplement to form T, to be used for showing particulars of rail failures.

Some of the details proposed in the first draft of the regulations have been eliminated. The separate sheets may be signed by any responsible officer, not necessarily by the one who com-



Child's Chair Used in Canadian Northern Dining Cars

necessity of reaching over the heads of others in order to place their hats on the overhead hooks and to remove them when leaving the car. Spring cushions have been eliminated, as it has been found that they are expensive to maintain. The absence of gimp is also noteworthy, the leather being simply folded in, making a clean, smooth surface. These chairs have so far not needed any repairs and are both light and substantial.

The child's chair, which is also shown, replaces the usual high cushion and has been favorably received by patrons of the road. As shown in the drawing, it consists of a box or frame upholstered in leather, and with two side pieces and a leather foot pad. The chair is placed on the seat of one of the ordinary dining

piles the final report. The particulars of the cause of an accident, however, must be given very fully and the statement must include "suggested improvements in procedure, plant and equipment for the prevention of similar accidents." The term Yard Accident is not to include accidents occurring on the main track. All persons, whether causing an accident or injured by it, must be named. Injured employees who are incapacitated for three days or less are not to be counted. Revenue passengers are to be distinguished from those not paying. Any railroad may file at Washington a copy of its rules and regulations, and in reporting cases of disobedience may simply refer to the number of the rule which has been disregarded.

An example of the detail required may be seen in paragraph 15, referring to train accidents, which is as follows:

15. Description of equipment: Give a brief description of damage to equipment, and, whenever possible, in reporting defects in equipment which caused or contributed to an accident, name the manufacturer and the type of the equipment or part, give weight and number or other identifying mark, and state the year of manufacture, and the year of placing in service; state also when, where and by whom the equipment was last inspected. Describe sufficiently the equipment involved and give all particulars necessary to permit its description and classification as follows:

- (A) Locomotives and parts:
 - (a) Description—
 - (1) Type, as simple, compound, articulated, etc.
 - (2) Wheel arrangement.
 - (3) Weight on drivers and total weight ready for service.
 - (b) Parts—
 - (1) Firebox and attachments.
 - (2) Boiler and attachments.
 - (3) Cylinders and steam chests.
 - (4) Reciprocating parts.
 - (5) Headlight.
 - (6) Pilot.
 - (7) Drivers.
 - (8) Truck wheels.
 - (9) Other parts of running gear as enumerated under cars.
 - (10) Miscellaneous parts, naming them.

This and other similar requirements apply to all accidents reported, even those of minor consequence.

It will be seen that in accordance with the requirements in connection with form V, the number of hours worked by all employees each month must be embodied in a statement to go with the accident report. For example, not only shopmen but station men and trainmen are liable to "falls of person" and to accident in use of tools, and must have their working hours recorded. As the new regulations were not received by some of the roads until after July 1, their records of man-hours for the first month may be somewhat lacking in accuracy.

A NEW COAL DOCK FOR THE CINCINNATI, HAMILTON & DAYTON AT TOLEDO

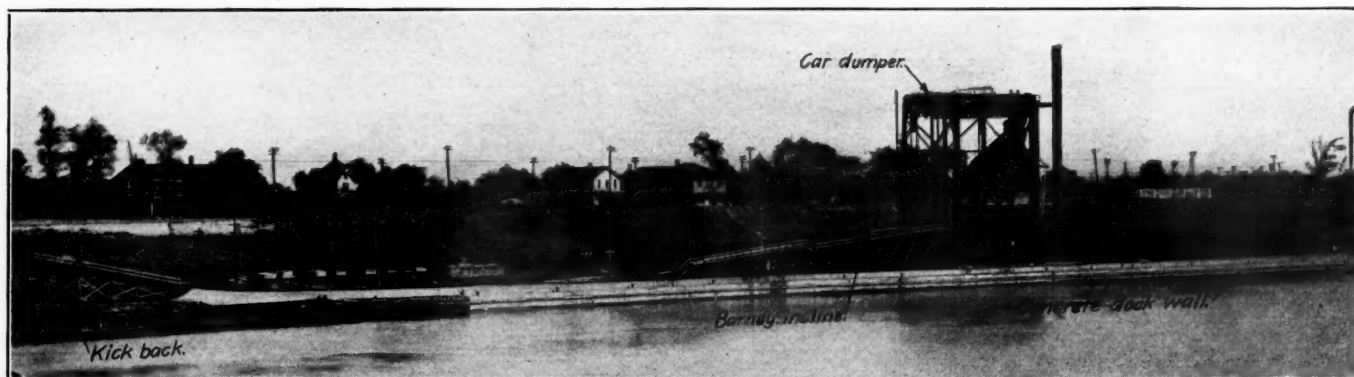
With the opening of navigation on the Great Lakes this spring the Cincinnati, Hamilton & Dayton placed in operation at Toledo a modern coal-handling plant, dock and yard to provide adequate facilities for a steadily increasing coal traffic. Work on this project was not started until December of last year. The new equipment is situated on the Maumee river, at Rossford. The

of concrete dock, the necessary foundations for the machine, the entire reconstruction of the load and empty yards and the fabrication and erection of a new mechanical car dumper with the necessary approach and run-off trestles. A drawing shows a cross section of the concrete dock construction. This type of dock was placed on both sides of the machine foundation. The dock immediately in front of the machine is of the same general construction, except that the batter piles were omitted, and the dock was made a part of the machine foundation, this foundation being of pile construction, capped with reinforced concrete slabs to which the dock is anchored.

The general layout of the plant is shown in the photograph. This machine is designed to handle cars of a maximum gross weight of 280,000 lb., and a length of 52 ft. over couplers. It is of the latest steam-operated type with counterweighted cradle, the steam being furnished by two Scotch boilers, each with a capacity of 250 h. p. The main engines are of extra heavy mill type construction, controlled by Hennebohl throttles. All gears are cast steel, with machine-cut teeth. Sheaves are also cast steel. The machine is designed to handle forty 100-ton capacity cars per hour. An unusual feature in the design of this machine is the placing of the cradle rail at an elevation of 30 ft. above the lake level, which is considerably higher than normally adopted for installations of this kind, this elevation being adopted because of a desire to reduce the amount of lift of cars in the machine to a minimum.

A disappearing barney was provided, which makes it possible to run a car over the barney pit from the load yard prior to the return of the barney from the delivery of a car to the machine. This is accomplished by means of by-pass gates in the barney track, which are operated by the steam cylinder controlling the reversing mechanism of the haulage engine. The barney returning from the machine passes into the barney pit on the by-pass gate nearest the machine, and then runs under the car to the end of the pit. The reversing of the haulage engine raises both by-pass gates, so that the barney in returning comes up behind the car by means of the by-pass gate furthest from the machine. This arrangement avoids the necessity of waiting for the barney car to return from the machine to the barney pit before the car is placed over the pit, and has the effect of keeping a car up to the machine at all times.

Contracts for the foundation and dock work and for the mechanical car dumper were placed about November 1, 1914,



View of Coal Dock From the Lake

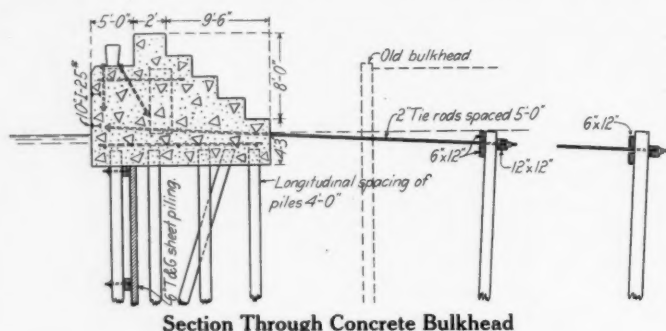
new dock is placed at the harbor line, which is a change in the old arrangement in which the dock was 25 ft. shoreward. This change enables the large freighters prying on the lakes to tie up directly at the dock and load their cargoes more quickly. The terminal is laid out with a yard having a capacity of 236 cars, adjacent to the unloading machine and in which 140 loaded and 96 empty cars can be handled. To the south of the dock is a classification yard with a capacity of 3,000 cars, affording ample space for assembling shipments. The yard plan is shown on the accompanying map.

The plans as prepared called for the construction of 802 ft.

and preparations were made for starting the work at the close of navigation. The old machine was abandoned on December 2, 1914, and the dismantling started the next day, simultaneous with the construction of the new dock. The piles in front of the old dock were driven by floating equipment, using steam hammers, while those back of the old dock were driven by land drivers. The piles were driven to refusal to a bed of hard pan and small granite boulders, approximately 31 ft. below the lake level. The cut-off for the dock was made at a point 18 in. below mean lake level. The operation of the floating equipment for driving piles and sheet piling was made possible during extremely

cold weather by using an ice tug to keep the river ice broken and clear of the site of the work.

The construction of the machine foundation was undertaken first, and upon completion of the driving of the piles and sheet piles for this portion of the work, the fill between the old and new docks was placed. The driving of the piles for the dock on both sides of the machine was then started and as the pile driving was completed and the sheet piling placed, the new work was connected with the old dock by means of temporary ties and the fill placed to the elevation of the bottom of concrete.



Section Through Concrete Bulkhead

With the exception of the sand, all of the materials used in the concrete work were brought to the site by rail. The sand was unloaded from boats at the dock site. The mixing plant was located about 1,000 ft. south of the machine, where the storage bins were provided and a heating plant for heating all material was installed. A boiler plant was also installed at the site of the machine foundation. The concrete was transferred from the mixing plant to the site of the work in drop-bottom buckets on flat cars, by means of narrow-gage equipment. The concrete was placed continuously and without reference to the

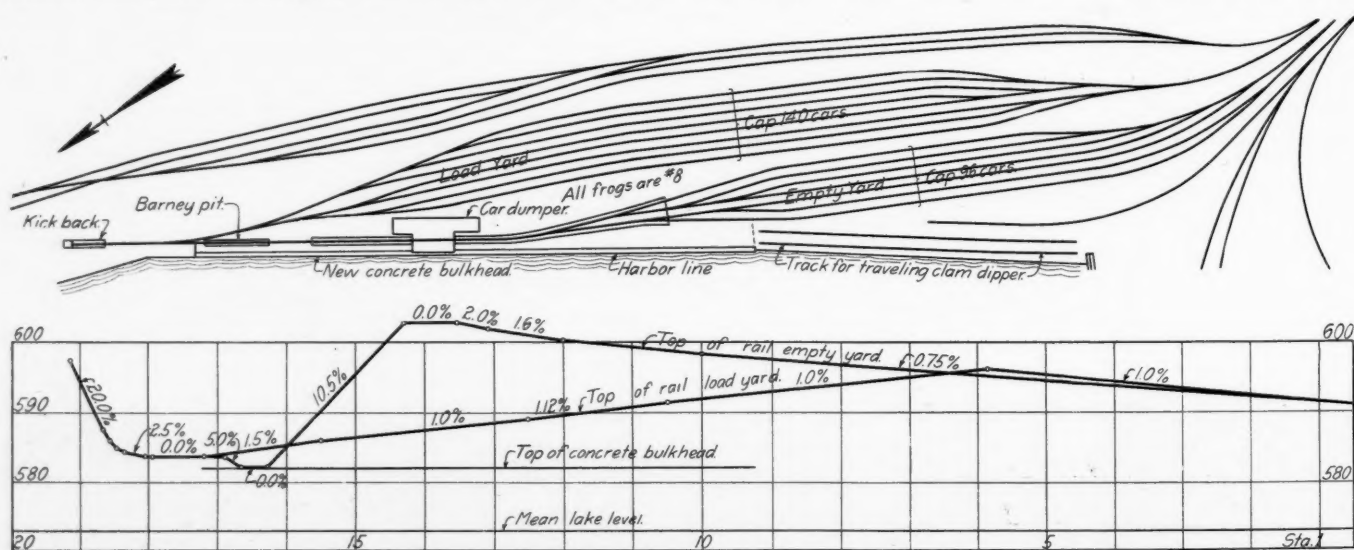
alignment and grades, at an elevation of approximately 8 or 9 ft. above the old yards. The material for all grading and back filling was secured from waste slag and cinder banks and hauled to the site of the work in standard-gage equipment. The reconstruction and raising of the yards were commenced December 6, 1914, and the yards were in condition for operation April 12, at the time the machine was completed. New first quality 90-lb. A. R. A. section rail was laid through switches and on curves, and 85-lb. A. S. C. E. first class relaying rail was used on tangents. The erection of the approach and run-off trestles was handled by the substructure contractor, the material being framed near the site of the work and transferred to final location and erected by means of a locomotive crane.

The construction as a whole involved the placing of the following material:

Piling in machine foundation and dock construction....	45,550 Lin. ft.
Tongued and grooved sheeting in machine foundation and dock construction.....	133,581 ft. B. M.
Reinforcing steel in machine foundations and dock anchorages for dock construction.....	218,543 lb.
Timber in machine foundations and dock construction..	47,407 ft. B. M.
Concrete in machine foundations and dock construction..	6,300 cu. yd.
Timber in approach and run-off trestles and kick-back trestle	184,925 ft. B. M.
Fill for load and empty yards and river fill between old and new docks.....	108,000 cu. yd.
New trackwork.....	15,000 lin. ft.
Of the foregoing estimated quantity of concrete, approximately 1,850 cu. yd. were placed below mean lake level.	

While the improvement as a whole was ready for operation on April 12, 1915, three days prior to the opening of navigation, the machine was not put into active service until April 19, when the first boat was secured. For the two months ending June 19, the machine handled 10,439 cars, or 469,064 tons of coal.

The two months' period of operation above referred to has developed the fact that the machine and yard are capable of handling the coal as fast as anticipated. In one day's run of ten hours, 340 cars were handled, with a total tonnage of 16,393.



Plan and Profile of the Yard Serving the Coal Dumper

weather conditions. This was made possible by having the materials properly heated, and by keeping it warm after it was in place by means of the steam plant located at the machine foundation. Some of the concrete was placed with temperatures as low as 12 deg. F. below zero with no bad effects.

The machine foundation was completed February 8, 1915. The concrete for the barney pit construction was completed March 7, the superstructure contractor started operations on February 2, and the first steel was raised on February 15. The machine was finished, ready for the preliminary test of the cradle on April 9, and the entire machine was completed ready for operation April 12. During the progress of the construction of the concrete docks, machine foundation and superstructure, the railroad company's forces reconstructed the yards to the revised

There were also handled in one day's run of twelve hours 405 cars. These runs involved the handling of 45 to 49 cars per hour for short periods.

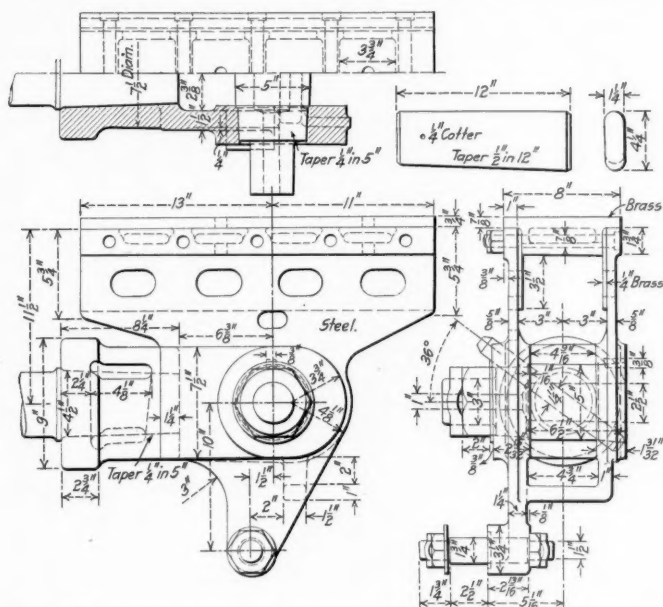
Smith-McCormick Company, of Easton, Pa., were contractors for the substructure and approach trestles, J. C. Carlin, of Toledo O., furnished the greater portion of the filling material, the Pittsburgh Construction Company, of Pittsburgh, Pa., were the contractors for the dismantling of the old machine, and the Wellman-Seaver-Morgan Company, of Cleveland, O., furnished the new car dumper. The design and construction of this plant was under the direction of F. L. Stuart, chief engineer, and the work was prosecuted under the supervision of A. M. Kinsman, engineer of construction; W. S. Bouton, engineer of bridges; A. H. Griffith, assistant engineer and P. Callahan, resident engineer.

Pacific Type Locomotives for the Burlington

A Design in Which Special Attention Has Been Given to Providing Light Weight in Reciprocating Parts

The Chicago, Burlington & Quincy has recently received 55 locomotives from the Baldwin Locomotive Works. These include 15 Pacific type passenger engines, 15 Mikado type freight engines, 15 2-10-2 type freight engines, five of which will be used on the Colorado & Southern, and 10 Mikado type engines for freight service on the Fort Worth & Denver City.

The special interest centers about the Pacific type locomotives,



Laird Type Crosshead Used on the Chicago, Burlington & Quincy Locomotive

which represent a new design, while those of the Mikado and 2-10-2 types are similar to engines previously built for this system.

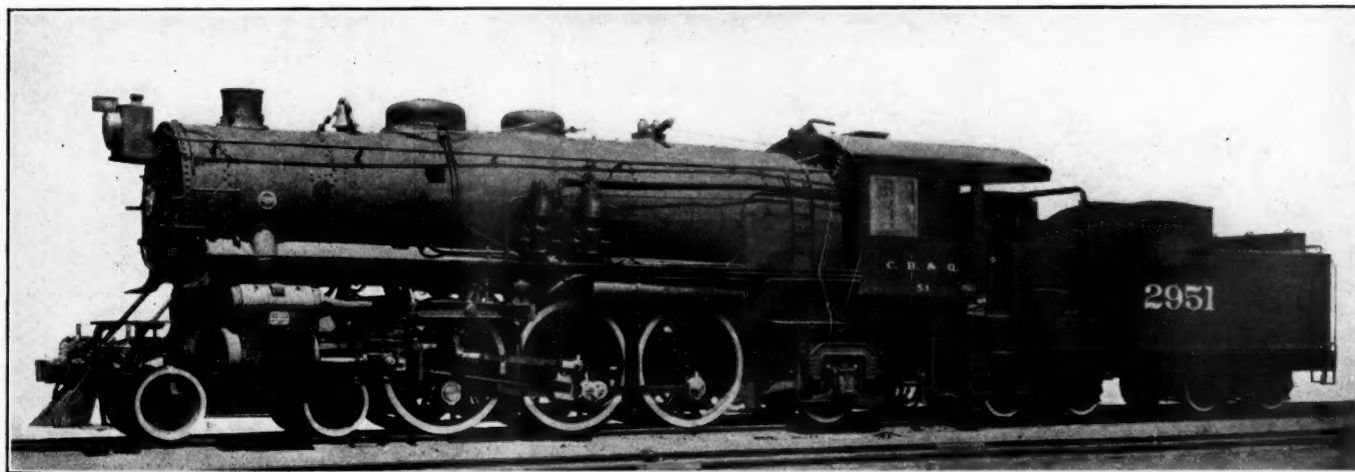
The Pacific type locomotives exert a maximum tractive effort

as far as possible, the dynamic augment on the rail when running at high speeds.

The boiler is of the extended wagon top type with a combustion chamber. The barrel is composed of three courses, the first course being sloped on top and the third course on the bottom. This construction provides ample steam space, and also a free entry to the throat under the combustion chamber. The tubes are of moderate length, and no attempt has been made to crowd them at the expense of circulation. The firebox is equipped with a brick arch, supported on angle irons. The railroad company's standard design of smoke consumer is applied, with four inlet tubes on each side of the firebox. The main dome, which is of pressed steel, is on the second boiler course; the auxiliary dome is on the third course, and is placed over a 16-in. opening in the shell, so that the boiler can be easily entered for inspection purposes.

Reference has been made to the special attention given to the design of the reciprocating parts and machinery. The pistons are of a dished section, and are of .40 per cent carbon cast steel, carefully annealed. They have iron bull rings cast on them. No extension rods are used, but the bull rings are widened, at the bottom, from 4 1/2 in. to 6 in. The piston rods are of Nikrome steel 4 1/4 in. in diameter, and hollow-bored with 2 1/2-in. holes. They are forced into the heads under a pressure of 35 tons. The crossheads, of the same material as the pistons, are of the Laird type, with bronze gibs. The lug for the union link is cast in one piece with the crosshead body. The crosshead pins are of Nikrome steel, hollow-bored. The main and side rods are also of Nikrome steel, the main rods having an I-section while the side rods are rectangular in section. The main stub is of the strap type with wedge adjustment. The front side rod tapers in depth from 5 in. at the front end to 6 1/2 in. at the back, with a uniform width of 1 5/8 in. The crank pins and side rod knuckle pins are of Nikrome steel, hollow-bored. Walschaert valve motion is used, and the gears are controlled by the Ragonnet power reverse mechanism.

As actually balanced, the dynamic augment, at a speed of 70

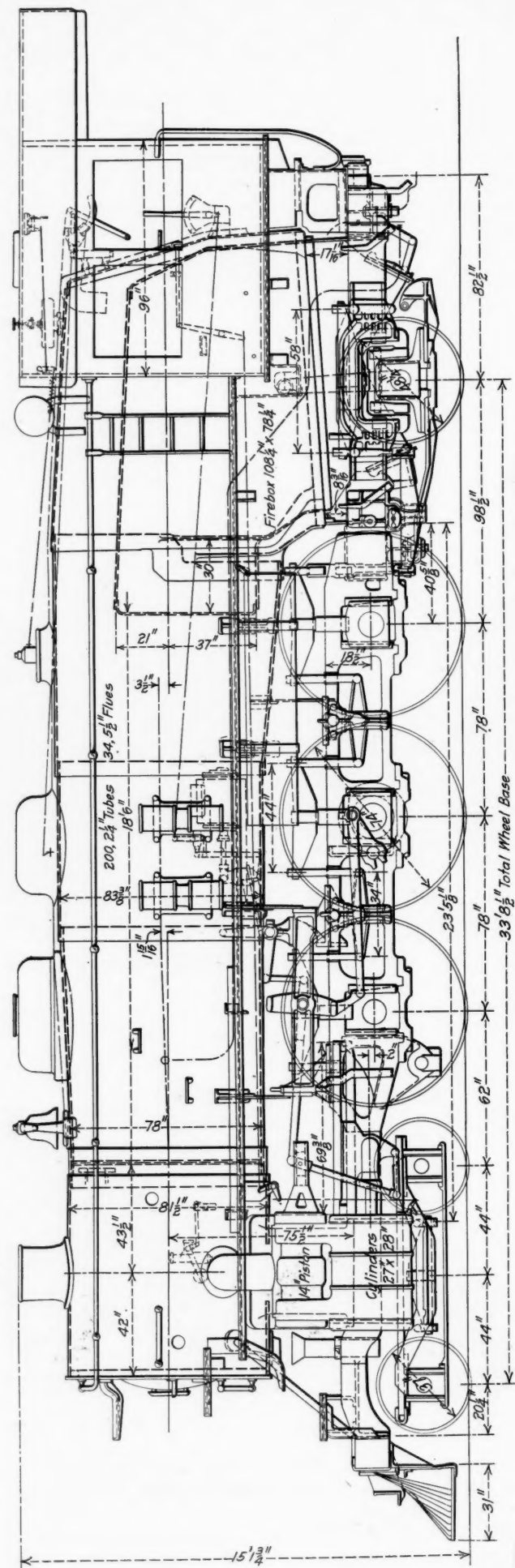
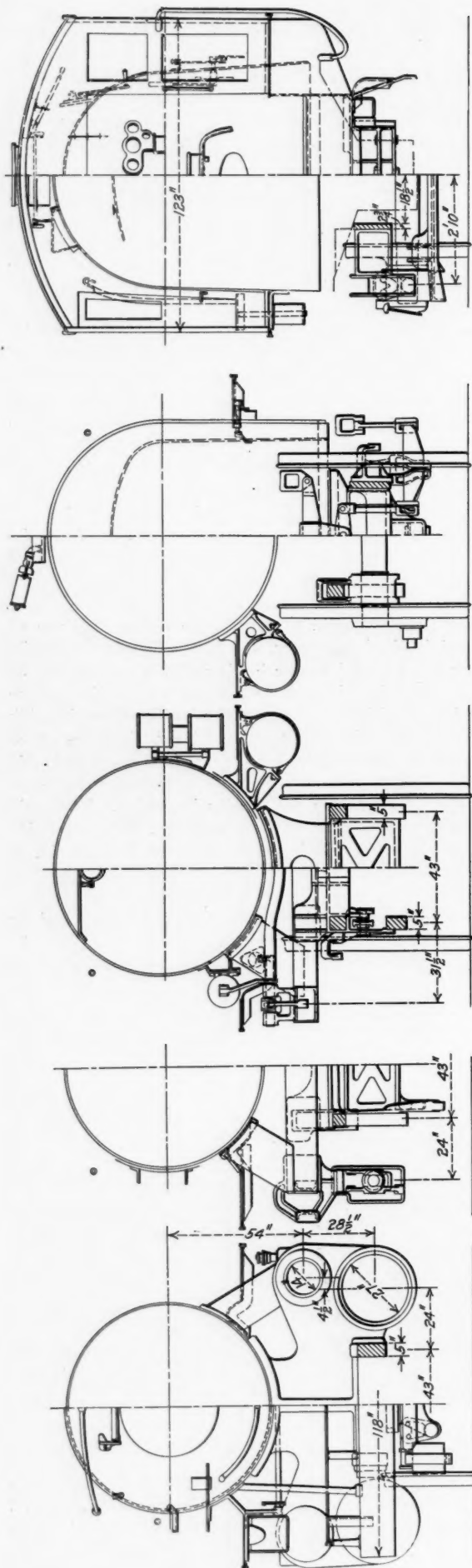


Pacific Type Locomotive for the Burlington

of 42,000 lb. and were designed to weigh approximately 170,000 lb. on the driving wheels, with a limit of 60,000 lb. on any one pair.

Special attention has been given to the design of the reciprocating parts and other machinery details, with a view to reducing,

miles an hour, amounts to approximately 38 per cent of the static weight for the front and back driving wheels, and 28 per cent for the main wheels. The proportion of the reciprocating weight that has been balanced is 61 per cent, and this is equivalent, on each side, to 1/202 of the total weight of the



General Arrangement of the Chicago, Burlington & Quincy Pacific Type Locomotive

engine. The following actual weights are of interest in this connection:

Piston and rod complete, with crosshead key.....	557 lb.
Crosshead	414 lb.
Main rod	870 lb.
Side rod, weight on front crank pin.....	158 lb.
Side rod, weight on main crank pin.....	490 lb.
Side rod, weight on back crank pin.....	168 lb.
Crank pins, complete { front	125 lb.
back	295 lb.
back	130 lb.

The accompanying table gives some comparisons between the weights of the reciprocating parts of this engine and the two most recent Pennsylvania Railroad passenger locomotives:

DATA FOR RECIPROCATING PARTS OF RECENT PENNSYLVANIA AND BURLINGTON PASSENGER LOCOMOTIVES										
Road and type	Cylinders and driving wheels	Boiler pressure, lb.	Piston load lb. (area piston x full b. press.)	Weight, lb.			Total* wt. of reciprocating parts, lb.	Piston load carried, lb.		
				Cross-head	Piston and rod	Main rod		per lb. wt. of rec. parts	per lb. wt. crosshead	per lb. wt. main rod
Penn., 4-6-2 27	in. x 28 in.; 80 in.....	205	114,000	491	520	930	1,376	83	320	219
Penn., 4-4-2 23½	in. x 26 in.; 80 in.....	205	89,000	327	408½	720	1,014	87	271	218
C., B. & Q., 4-6-2 27	in. x 28 in.; 74 in.....	180	103,000	414	557	870	1,319	78	249	185

*Includes 40 per cent. of the weight of the main rod.

The cylinders are cast from the same pattern as those used on the Mikado type locomotives for the Fort Worth & Denver City. They are fitted with vacuum relief valves, but no by-pass valves are used. The guide for the valve stem crosshead is cast in one piece with the back steam chest head.

The frames are of .40 per cent carbon cast steel, annealed, and manufactured to specifications prepared by the American Society for Testing Materials. The main frames are six inches wide. The rear sections are of slab form, arranged to accommodate the Rushton type of trailing truck with outside journals, which in this case is fitted with three-point suspension links. The frames are braced transversely at the front and main driving pedestals, also by the guide yoke, valve motion bearer, and a

truck, prevents any rocking action on the part of the driving springs from being transmitted to the truck springs, or vice versa.

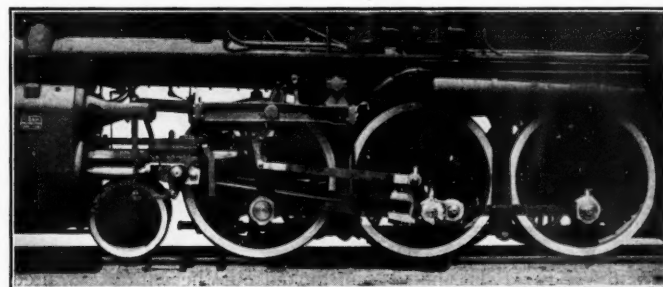
The tender is equipped with a coal pusher, and is carried on equalized pedestal trucks. The wheels are of forged and rolled steel, manufactured by the Standard Steel Works Company.

These locomotives were designed by the builders, in consultation with F. A. Torrey, superintendent of motive power, and C. B. Young, mechanical engineer of the Burlington. The practice of the railroad, as far as details are concerned, has been

closely followed. The principal dimensions and data are given in the following table:

General Data

Gage	4 ft. 8½ in.
Service	Passenger
Fuel	Bit. coal
Tractive effort	42,000 lb.
Weight in working order	266,400 lb.
Weight on drivers	169,700 lb.
Weight on leading truck	47,800 lb.
Weight on trailing truck	48,900 lb.
Weight of engine and tender in working order	425,000 lb.



Driving Wheels and Rods of the Burlington Engine

Wheel base, driving	13 ft.
Wheel base, total	33 ft. 8½ in.
Wheelbase, engine and tender	65 ft. 10¼ in.

Ratios

Weight on drivers ÷ tractive effort	4.04
Total weight ÷ tractive effort	6.35
Tractive effort × diam. drivers ÷ equivalent heating surface*	692.00
Equivalent heating surface* ÷ grate area	76.50
Firebox heating surface ÷ equivalent heating surface,* per cent.	6.50
Weight on drivers ÷ equivalent heating surface*	37.80
Total weight ÷ equivalent heating surface*	59.40
Volume both cylinders, cu. ft.	18.55
Equivalent heating surface* ÷ vol. cylinders	242.00
Grate area ÷ vol. cylinders	3.17

Cylinders

Kind	Simple
Diameter and stroke	27 in. by 28 in.

Valves

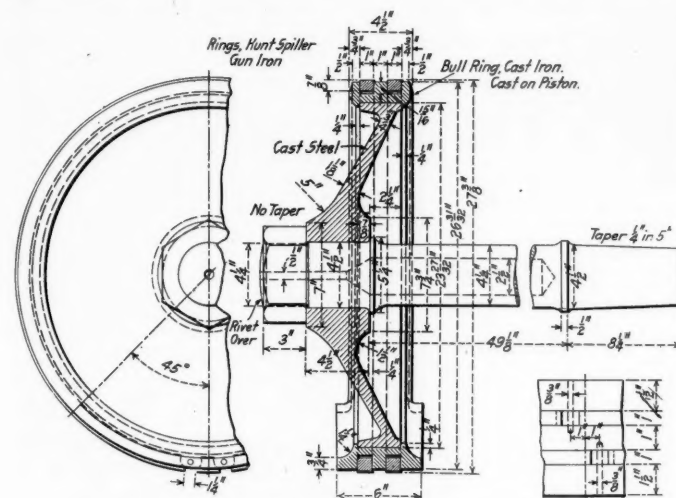
Kind	Piston
Diameter	14 in.

Wheels

Driving, diameter over tires	74 in.
Driving, thickness of tires	8 in.
Driving journals, main, diameter and length	11 in. by 12 in.
Driving journals, others, diameter and length	10 in. by 12 in.
Engine truck wheels, diameter	37 in.
Engine truck, journals	6 in. by 12 in.
Trailing truck wheels, diameter	48½ in.
Trailing truck, journals	8 in. by 14 in.

Boiler

Style	E. W. T.
Working pressure	180 lb. per sq. in.
Outside diameter of first ring	78 in.
Firebox, length and width	108¼ in. by 78¼ in.
Firebox plates, thickness	¾ in. and 5/8 in.
Firebox, water space	4 in. and 6 in.
Tubes, number and outside diameter	200—2¼ in.
Flues, number and outside diameter	34—5½ in.
Tubes and flues, length	18 ft. 6 in.
Heating surface, tubes and flues	3,072 sq. ft.
Heating surface, firebox	292 sq. ft.
Heating surface, total	3,364 sq. ft.
Superheater heating surface	751 sq. ft.



Piston Used on the Burlington Locomotive

waist sheet crosstie placed between the main and rear pairs of driving wheels. At the splice between the main and rear frames is placed a strong transverse casting, which contains a pocket for the rear truck radius bar pin, and also supports the front of the firebox through a vertical expansion plate.

The pedestal shoes and wedges are of bronze. The driving wheel centers are fitted with bronze hub plates, and the driving axles are of chrome-vanadium steel, heat-treated and hollow-bored.

The equalization system is cross-connected between the rear driving wheels and trailing truck. A central vertical link connects two transverse beams. The upper beam is suspended from the rear driving springs, while the lower beam is connected, by means of a vertical link on each side, with the rear truck equalizers. These are placed on an angle, so that they can connect with the truck spring hangers, which are placed outside the wheels. This construction, while maintaining the desired weight distribution between the driving wheels and the rear

Boiler (Continued.)

Equivalent heating surface*.....4,490 sq. ft.
Grate area58.7 sq. ft.

Tender

Weight158,600 lb.
Wheels, diameter37 in.
Journals, diameter and length.....5½ in. by 10 in.
Water capacity8,200 gal.
Coal capacity13 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

THE WAR TEST OF FRENCH POLITENESS

BY WALTER S. HIATT.*

The courtesy of the French railway employee in these times of stress is one of the details that cannot fail to attract the attention of the war-time traveler in France. We Americans are inclined to discount the real sincerity of French politeness and to regard it perhaps as superficial. The excitement of the great life and death struggle of the past 12 months, which surely could not possibly be a more supreme test of French character, has proved, however, that the French element of courtesy has a most solid foundation. Most people, however polite and kind they may be under normal conditions, are likely to forget their politeness in moments of stress. With the French the opposite is true.

Since I have been in France this year I have never seen posted in the stations or office buildings notices that employees must treat travelers with consideration. Yet, here is what happened to me one night while traveling in a train from Orleans to Paris. I wanted to get off at a certain station just inside Paris, but not the terminal station of the railroad. A railway employee happened to get into the compartment which I occupied. He had evidently been working all day and was going to another point of the road to continue his work the next day. The sleep he got on the cushion en route would probably be all that he would get. Before he stretched himself out, I asked him the exact name of the station where I wanted to get out. He told me and then went to sleep. From time to time, however, I noticed that he woke up to look at his watch. Finally, as the train began to slow down for Paris, he got up, looked out the window, waited a few minutes, and then said to me: "You get out here." I thanked him and the last I saw of him he was stretching himself out for a real sleep. He must have gone without a good deal of necessary sleep in order to be sure that I alighted at the right place. There is nothing extraordinary about this incident if it were not that it happens all the time.

That the French railway man has not lost his politeness in all the pressure and overwork accompanying the war is all the more to his credit, because, in perhaps nine cases out of ten, he has some distracting private grief, such as a son, brother or a father wounded or dead in battle. It is hardly necessary to point out that in a country where there are nearly two million dead, wounded or missing, every living individual must be affected.

If anything the French employees are more polite than before the war. They used to seem to me the least bit noisy, curt and self-important. This may have been because formerly my knowledge of French was limited, or again, it may be that the war has brought out fully the true character of the French and that the war and its suffering has made them more ready to respond to the needs of the traveler. But whatever the cause, the big fact remains that they are now as polite as one could hope. In a time when no stranger is looked upon favorably and when every stranger may be a spy in disguise—the French have paid bitterly for their old welcome to the stranger—they give every help to him who is unable to speak the language and is not familiar with French methods of travel. I have even seen a station master pilot a stranger half a block, either to or from the train, in order to set him right, and this in the heart of a big, scrambling crowd.

The railroad man, in being polite, does not appear to be acting

mechanically, as if carrying out company orders, nor does he become familiar by virtue of the service rendered. From the lowest to the highest employee, he does it with a certain air of self-respect and dignity. He acts as if he owes it to himself to be polite. There is no condescension in his manner, and no matter who you are, he makes you feel as if you were an important person, worthy of his every attention.

Thus, lately in Paris, I had occasion to call at the terminal of the Eastern Railroad to obtain a certain printed report. The porter at the street door, probably paid a dollar a day, without having the slightest idea of who or what I was, who saw in me merely a man who needed guiding in the labyrinth of a big and strange office building, showed me half way up the stairs. I might as well have been the company president by his manner. Another porter bowed me into a waiting room and took my message. He didn't look me all over, measure me up and down with a roving, calculating, half-insolent eye, as if to say: "Shall I throw him out or let him wait until he gets tired and goes away himself?" He saw in me an unknown person who wanted something and he made me feel at home by his manner. The clerk who came out treated me in the same fashion, with a slighter shade of reserve possibly, excusing himself for a moment while he went to ask if I might be given what I asked for. He brought the report out to me finally. However, had he been compelled to refuse it, his politeness would have been more gracious yet; he would have "regretted" with such nicety that I would not have gone away disgruntled, angry at the company, nor yet disappointed, but feeling that there were excellent reasons for the refusal.

There is one dull spot in this polished shield of the French railroad man, so far as concerns the traveling public, and that is the adamant attitude concerning the fares of children. It is hard to understand why such should be in a country where children are so loved. It is not so much the fault of the employee as it is of the company rules. The average conductor in the United States is struck blind when he sees children with their parents. If he sees the children at all, he ignores their ages, takes whatever fare is offered and lets this amiable fraud be worked on the company. Here in France, from time immemorial, the ticket collectors (who are not conductors, but rather employees who get on and off the trains at intervals) have been inexorable about children's fares and their politeness is sorely tried in securing their payment. During the war they have not been too careful about whether grown-ups paid first, second, or third class fares, but they have not forgotten to collect every time for children. The mothers who accompany their children, particularly in second and third class compartments, are always provided with sharp tongues and, with the ticket taker as unyielding as the rock of Gibraltar, an argument inevitably ensues. It is always a one-sided one, for a rule is a rule in France, no matter how stupid, and the railroad men enforce it to the letter.

Children over three years of age pay half fare and over seven full fare. So expert are the collectors that they can tell a child's age almost to a month. The strictness about children's fares must be set down as one of the curious sides of French railroading, and as providing the situation in which only French politeness could be equal to the emergency.

STATE RAILWAY CONSTRUCTION IN NORWAY.—The state railway construction in Norway is progressing on a very large scale, although some of the important work now in hand will not be completed at the time originally intended. Thus the Doore railway and the Rauma railway were to have been ready in 1917, but neither undertaking will be completed at that time. According to the railway plan of 1908 the railways which it comprised were calculated to cost \$13,600,000, but the actual expenditure has now been put at \$23,200,000. Alterations and further new lines, which have been decided upon later, were calculated to entail an aggregate expenditure of \$9,400,000, but they will, it has transpired, cost some \$2,700,000 more than originally calculated.

*Our special European correspondent.

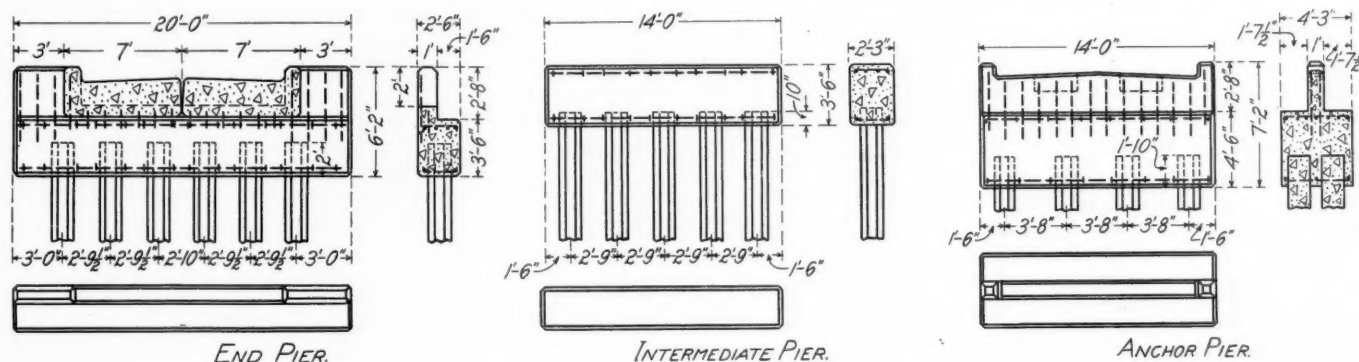
SOLID DECK TRESTLES AND BRIDGES ON THE ILLINOIS CENTRAL

The Illinois Central has recently opened for traffic about 34 miles of second track between Gibbs, Tenn., and Kerrville, on the main line just north of Memphis, the last single-track mileage between Chicago and Memphis. The construction of this second track involved the handling of 1,300,000 cu. yds. of grading and the building of about 9,500 ft. of concrete trestle in addition to other minor bridge work. In the design of these trestles the solid piers which have been used in a number of instances on this road to support concrete slab decks, were replaced by concrete pile bents recently adopted as the road's standard, the cost of the latter being about 80 per cent of that of the former. In order to secure the advantages of a solid deck on two 80-ft. through plate girder structures located between sections of the concrete trestle these bridges were built with concrete slab floors involving a number of interesting details.

The concrete trestle was used in heights ranging from 8 ft.

piles and the caps are 14 ft. long, 2 ft. 3 in. wide and 3 ft. 6 in. deep. The anchor bents have a double row of four piles each with a cap 14 ft. long, 4 ft. 3 in. wide and 4 ft. 6 in. deep, having a center wall 1 ft. thick extending up to the top of the slabs. An open space of 2 in. is allowed between the ends of the slabs and the back walls on the end bents and the center walls on the anchor bents. The heads of the piles are embedded in the concrete cap 2 ft. in the end bents, 10 in. in the intermediate bents and 1 ft. 10 in. in the anchor bents. When built as a double-track structure the end piers are 34 ft. long and the intermediate and anchor piers 28 ft. long, the two tracks being spaced 14 ft. center to center.

The piles used in this trestle are hexagonal with the lower end pointed. They are reinforced with spiral and longitudinal rods securely tied. The piles were made by the C. F. Massey Company, at Memphis, were seasoned 30 days and were driven with a steam hammer, using a wooden driving block and a rope cushion. The soil was clay and the piles sustained little damage in driving. The reinforced concrete caps were built



General Details of the Illinois Central Reinforced Concrete Trestle

to 20 ft. for practically all locations where timber trestles had been used in the old single-track line. In cases where the old structure in the first track had not reached the end of its life the new concrete trestle was built along side with the intention of renewing the wooden structure by a second single-track concrete trestle when necessary. In other locations the old timber construction was replaced by a new double-track concrete trestle.

The standard panel length is 16 ft., although in some instances

in place over the heads of the piles, the material being carried from stationary mixing plants in narrow-gage cars along the edge of the old trestle, where the new structure was of considerable length. For short trestles the material was handled with wheelbarrows to movable mixing boards. The end bent caps required 7 cu. yd. of concrete, the intermediate bents 4 yd. and the anchor bents 11.3 yd. The slabs are of a type used quite generally by this and other companies, the width of each slab being half the width of a single-track structure. About 250



One of the Sections of Reinforced Concrete Trestle, Built on Concrete Pile Bents, in Double Tracking the Illinois Central North of Memphis

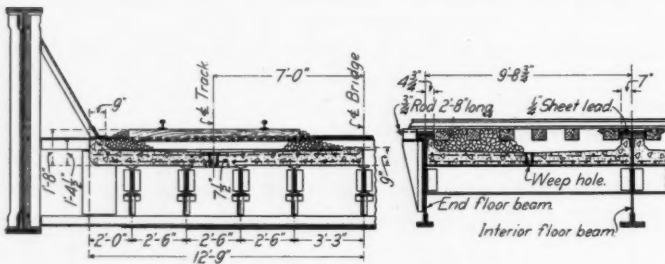
this was varied in order to miss the bents in the old trestle. The bents are of three types, the end, the intermediate and anchor. The anchor piers are located at every sixth bent in trestles of ten or more panels, serving to stiffen the structure. In the single-track structure, the end bents consist of six piles with a cap 20 ft. long, 2 ft. 6 in. wide and 3 ft. 6 in. deep and a back wall extending 8 in. up on the slab at the ends and to the top of the slab at the sides. The intermediate bents have five

of these slabs were cast by the C. F. Massey Company, and the rest were made by company forces in two yards at Fulton, Ky.

The two single-span through plate girder bridges with concrete slab floors are of standard design except for the lowering of the stringers, and the addition of one I-beam stringer at the center of the floor beams. The two slabs which are placed side by side in each panel between floor beams are supported on nine stringers, the tops of which are 1 ft. 4½ in. below the tops of

the floor beams. Each slab is 9 ft. 8 $\frac{3}{4}$ in. long, the spacing between floor beams, and 12 ft. 9 in. wide. The slabs are cast with a curb along both edges to retain the ballast and across the end to fill the space under the flanges of the floor beams. The upper surface of the slab is pitched one inch from each side to the center where a 4-in. drain tile is inserted, being covered by a cast iron grating. The thickness of the slab at the center is 7 $\frac{1}{2}$ in. and the maximum thickness over the curb is 1 ft. 4 $\frac{1}{2}$ in.

The minimum depth of ballast under the tie is 6 in., bring-



Details of Concrete Floor for Through Plate Girder Spans

ing the bottom of the ties 2 $\frac{1}{2}$ in. below the tops of the floor beams. The two ties adjacent to each floor beam are held tightly against the flanges by $\frac{3}{4}$ -in. rods 3 ft. long threaded on both ends which are passed through the ties just outside of each rail and tightened by a nut on each end. The tops of the floor beams are covered by $\frac{1}{4}$ -in. lead sheets and the curb walls around the slabs, the tops of stringers and the tops and sides of the floor



A Portion of One of the Illinois Central Concrete Trestles, Showing the Solid Ballasted Deck

beams which come in contact with either lead, concrete or timber and the top surface of the slabs are thoroughly coated with pitch. A $\frac{1}{2}$ -in. space between the slabs is filled with pitch. The slabs for each of these 80-ft. double-track girder spans required 62 cu. yd. of concrete.

All of the bridge work on this double-tracking project was carried out by company forces under the supervision of the engineering department, A. S. Baldwin, chief engineer; F. L. Thompson, assistant chief engineer, and Maro Johnson, engineer of bridges and buildings.

REDUCING STOCK CLAIMS

By J. L. COSS,

Despatcher, Rock Island Lines, Haileyville, Okla.

The railroads running through the Southwest have been paying out large sums of money each year as damages for stock killed on the right of way. In this particular part of the country there are few communities which support stock laws, and the farmers and stockmen as a rule do not co-operate with the railroads in trying to keep animals off the railroad property. In many cases it seems that they favor allowing the stock to be killed by the roads because they receive full value for it. It costs a railroad about \$300 a mile to fence its right of way and the cost of repairs and renewals is high; while because of the large number of almost-wild animals running at large it is almost impossible to fence against them. The question has often been raised whether it was cheaper to kill the stock or to fence the right of way. However, the conclusion has been that where stock is allowed to enter railway property there is always a chance of derailment of trains.

For the year ending June 30, 1914, the damage to stock alone on seven railroads running through this territory amounted to \$889,693. In order to reduce these payments and eliminate the possibility of accidents, the superintendent of the Indian Territory division of the Rock Island asked the co-operation of all employees. He issued special instructions to engineers that they must not under any circumstances take chances in striking stock and must stop their trains if necessary to avoid it. They must also notify the first section gang where they saw stock, gates open, fences down or any condition which might lead animals to enter on the right of way. The section men are required to go there at once, night or day, drive the stock off, repair the openings, and report. Train and engine men also notify the despatcher of the location of any stock and the despatcher immediately advises all trains and also sends word to the section men to remove the stock. The block operators also place the location of stock on their restriction and clearance cards to trains and when operators block with each other the stock conditions must be given the same as the information concerning trains. The operators also notify the section men of the location of stock. With this concerted action on the part of all concerned there is scarcely a chance for any stock on the right of way to be lost sight of for any length of time.

These measures effected a reduction in the payments for damage to stock from \$6,900 for April, 1914, to \$1,400 for April, 1915. This has been accomplished by the superintendent giving this matter his personal attention and impressing its importance on all employees. Getting the section men out at night to chase stock off the right of way has made them more careful to see that the fences, gates and guards are in good shape. Requiring the enginemen to explain personally before an investigating committee why and how they struck stock has made them more careful. The storekeeper has also been impressed with the necessity and importance of sending out repair fence material when ordered. The despatchers are careful in placing their orders immediately on receipt of advice regarding stock on the right of way, and in getting word to the section men by the first train. At first, the train orders covering advice to trains regarding the location of stock numbered from 15 to 20 a day, while now they run from 3 to 7, and some days none.

WESTERN AUSTRALIAN RAILWAYS.—Western Australia had 2,854 miles of government railway in operation at the close of June, 1913. The cost of construction and equipment to the same date amounted to \$71,580,000. Branches were opened in many directions between 1908 and 1914. The object of these lines is to develop new country, and several additional spurs are in course of construction. The government of Western Australia has its finances well in hand, and while the government railways have undoubtedly given a great impetus to Western Australian industries, they have not been a source of embarrassment to the Western Australian treasury.—*Engineering*, London.

The Unnecessary Movement of Empty Freight Cars

Committee Report of the General Superintendents' Association of Chicago on the Proper Handling of Equipment

The General Superintendents' Association of Chicago early this year appointed a Committee on the Promotion of the Proper Handling of Equipment, consisting of E. E. Betts, superintendent of transportation of the Chicago & North Western, chairman; W. E. Beecham, car accountant, Chicago, Milwaukee & St. Paul; F. C. Batchelder, president, Baltimore & Ohio Chicago Terminal; E. H. DeGroot, Jr., superintendent of transportation, Chicago & Eastern Illinois; L. M. Betts, car accountant, Belt Railway of Chicago, and F. C. Schultz, chief interchange inspector, Chicago Car Interchange Bureau, to investigate the unnecessary movement of empty cars within the Chicago terminal district, with reference to good order empty foreign cars seeking a home route, cars delivered in bad order to fill orders for loading, and bad order empty cars seeking a home route. The committee has made a thorough study of the situation, and has issued a series of bulletins to members of the association, giving detailed statements of cars which it considered had been improperly handled, with the idea that giving publicity to the conditions found would result in an improvement. The committee also submitted a number of recommendations.

A special meeting of mechanical and transportation department representatives of all Chicago lines was held by the General Superintendents' Association on June 2, and the committee submitted the results of its investigation in a report. An abstract of this report is as follows:

REPORT OF COMMITTEE ON PROPER HANDLING OF EQUIPMENT

It is generally admitted that the present practice for handling foreign cars by the transportation and mechanical departments results in great economic losses to the railroads. Under the present practice of using cars regardless of ownership it is of common occurrence that their absence from home lines is indefinitely prolonged. They run without proper mechanical attention from one road to another, their condition growing steadily worse until they become a menace to the safety of trains and dangerous to life and limb. They are then taken out of service. They may be patched up and sent limping home for the owner to rebuild or destroy, or, perhaps, that is done by the road having the old worn-out cripple in possession when it finally lies down and can go no further, but in any event the results are the same—the owner pays the bill and is most injured by the practice of neglect.

Some of the bad results directly chargeable to the failure to keep cars in repair are shown in the increase in per diem expenses and empty mileage and in operating expenses, but undoubtedly the worst features are mechanical, the results of which fall on the owner. He cannot secure the return of his cars that he may keep them in repair, even though he is able and disposed to do so himself, and others will not do that for him. He stands helplessly by, sees his property depreciating physically day by day, its serviceability decreasing, and its life shortened by a practice he himself is a party to but is powerless to stop.

A car absent from the home line, we will say six years (and that is not unusual), becomes afflicted with old defects, some of them owners' defects, others users' defects. The car is finally taken out of service, and is then offered in interchange to a road which is known in our parlance as the "home route." The home route line rejects the car on account of its condition, and, pending a settlement of the question as to who is responsible for its condition and should make the repairs, it is held at the interchange point until the per diem accruing thereon is frequently many times greater than the cost of the repairs would amount to.

In other cases, especially in large terminals like Chicago, the

failure to inspect and properly repair cars, and the attempt to pass them from one road to another in defective condition, creates a heavy terminal expense where belt lines are used as intermediate links, and greatly increases the per diem earnings of idle and unserviceable cars.

The failure to keep cars in repair applies to all railroads in greater or less degrees. Probably no railroad is free from that charge. In some cases it is undoubtedly a studied policy; in others it is chargeable to a lack of facilities, indifference and carelessness of employees, and various other reasons, but in our judgment under any and all circumstances it is a mistaken policy, because the interests of railroads are linked together in this proposition so that what injuriously affects one injuriously affects all.

One of the fundamental principles of the Master Car Builders' rules is that, "Each railway company must give to foreign cars, while on its line, the same care as to inspection, oiling, packing, adjusting brakes and repairs that it gives to its own cars." This virtually makes the attention which a road gives to its own cars the standard for the attention it should give to foreign cars.

If this may be taken as a declaration of principles, it is open to construction by the individual, and is, therefore, of little or no value for the government of such interests as are combined in this proposition, and which the Master Car Builders' Association is supposed to protect and to properly provide for.

The Master Car Builders' rules make owners responsible for, and therefore chargeable with, the repairs to their cars necessitated by ordinary wear and tear in fair service, so that defect cards will not be required for any defects thus arising, and, if we are able to construe this rule properly, it is based on the idea that cars afflicted with defects that owners are responsible for may be returned to the owners for repair, and here we believe is the cause of all our difficulties where the mechanical department is involved, because it virtually permits railroads to avoid making repairs to cars and permits them to be sent home for that purpose. We believe this to be a fatal defect in the Master Car Builders' rules.

We now reach the point where in theory a given rule is just and equitable, while in actual practice the rule works a hardship and economic loss. Theoretically the M. C. B. rules contemplate the proximity of car owners' connections with the line to which a loaded car is last delivered. Therefore, when a car is made empty under such circumstances, the car is to be returned in practically the same condition in which it was originally received.

Box cars are loaded promiscuously by railroads which have no direct connections at Chicago. When they enter the Chicago territory, they are pooled, loaded anywhere and everywhere and their absence from owners covers long periods. Result—The cars lose the channels of "home" (no short-routing being permitted) except by circuitous routes resulting in excess mileage and the handling lines are unwilling to repair them, each railroad basing its justification for the refusal to repair cars upon the short period the cars are in its possession.

In large terminals like Chicago, some one should have arbitrary power to schedule cars for repairs under Rule 120 and check up to see that they are properly made—then the theory and practice under M. C. B. rules 1 and 120 become consistent and effective, and such box cars which have no direct connection with car owners' railroads will be repaired and placed in revenue service. Until a change is made along these lines, our difficulties will continue.

Another principle fully set forth in the Master Car Builders' rules is, that cars offered in interchange must be accepted if in

safe and serviceable condition, the receiving road to be the judge. The owners must receive their own cars, when offered home for repairs, at any point on their line, subject to the provisions of the rules. A car may be in safe condition to handle, but not be in condition for service, and here to our mind is another defect in the Master Car Builders' rules. This rule is open to criticism as being indefinite. It confers a latitude upon the receiving line which everybody recognizes as being eminently proper, as naturally the right to determine the safety and serviceability of cars to suit the receiving line rests with itself, and from that decision there can be no appeal, because this rule says in effect that, if the receiving road is satisfied to accept a car offered in interchange it has the privilege of doing so. If, for any reason, it does not wish to do so, it may refuse the car, and there the matter seems to hinge. There is no standard of principle in such a rule as that, and it can only result in endless disputes, bad delays, useless expense, and just as soon as you appeal from the decision of the receiving line you take away the right conferred by the rule, and the rule then becomes void and of no effect.

Illustrations are not wanting to show in the most emphatic manner that the amount of unnecessary mileage incurred by railroads in moving cars in an opposite direction from home in order to get them home is so enormous as to be almost beyond belief. Among the many cases which serve to emphasize the point is that of a car which was loaded for Toledo, Ohio, via the Pere Marquette and Milwaukee. The car went through to its destination, 340 miles, and when made empty it was returned to the delivering line at Milwaukee. At Toledo it was about 660 miles from an interchange point with the owners. When it returned to Milwaukee it was 1,000 miles away.

The present practice of handling empty foreign cars in an opposite direction from home instead of keeping them moving in a homeward direction according to their initials, is not justified by any requirement or necessity the railroads are called on to deal with.

If we are to secure proper and unrestricted movement of cars, and be able to employ them to their fullest extent, they must be kept in repair by the mechanical department. This seems to be a simple proposition on paper, and, inasmuch as repairs that owners are responsible for can be charged with a profit, we believe, to the road making them, the work should be done, and we can see no reason why it is not, unless the question of facilities, labor, supply of materials and other mechanical disabilities make it impossible. Where that is the case the cheapest, best and most rational thing to do before the car becomes in a dilapidated condition is to send it home direct to the owners and let them repair it, and such a car should not be made to travel two or three thousand miles in order to cover an intervening area of 100 miles or less.

The judgment of the mechanical department is accepted by the transportation department in all cases where the safety and serviceability of cars is concerned. At all interchange points rigid inspection should be maintained. Cars that are offered in interchange under load not in serviceable condition should be transferred and the empty returned to the delivering road, but if the transfer of the shipment is impracticable, some arrangement should be made to send the car through to destination, provided that it is safe, and when unloaded at destination, if it is wanted for a return load, or a load in another direction, the road using the car should make all necessary repairs, or should return it to the road it was received from to be continued in its homeward direction so that the owner may make them.

Individuals will differ as to what is or is not a serviceable condition, and for that reason if it is possible to define it, in a general way, at least, it should be done. There should be a standard of excellence for a freight car which shall govern inspection, and a matter of such vital importance to the railroads should be regulated by certain well-defined mechanical rules.

The remedy for the troubles that afflict the car supply, the handling of cars so far as the transportation department is concerned, is to be found in the movements of empty cars in a home-

ward direction by the shortest and most direct routes, the initials of the cars to be the ruling guide, no other marking, carding rules, or regulations being necessary.

RECOMMENDATIONS

The committee also offered a series of resolutions to be referred to the Master Car Builders' Association and to the special committee of 25 mechanical and transportation officers to be appointed by the president of the American Railway Association, in accordance with action taken at its recent meeting in New York. The resolutions urged that the Master Car Builders' Association considered the adoption of a standard of maintenance for all equipment offerable in interchange, and the elimination of an interpretation issued by the Master Car Builders' Association under date of January 1, 1915, in M. C. B. circular No. 16, under which, the committee declared, "loaded foreign cars may be delivered in bad order to a connection and by it hauled to destination, and eventually, regardless of the length of time, be returned empty to the delivering line, if in the same physical condition, thus defeating the intent of M. C. B. rules 1 and 2, which provide for repairs to such cars." The M. C. B. Association was also earnestly requested to take such further action as will make obligatory the handling of bad order cars strictly in accordance with the present terms of M. C. B. rules 1 and 2, and provide for the handling of bad order cars under the following principles:

Cars to be accepted in interchange, either loaded or empty, must conform to the standard of maintenance to be agreed upon.

A loaded car destined to a point with the limits of the terminal at which it is delivered, or a car which must be transferred on account of bad order (not complying with this standard of maintenance), must be accepted if safe to run and carded with Bad-Order-Return-When-Empty cards, or bad-order transfer cars, such cars to be returned empty to the delivering line.

A car not conforming to the standard of maintenance to be adopted, accepted by a receiving line and taken out on the road, must be repaired by the unloading line when empty, or returned to its owner.

Cars belonging to roads with which delivering line has no connection must not be transferred by the receiving line in order to save per diem or avoid repairs, which may be made under load, when such cars are loaded in a homeward direction.

Another resolution referring to good order foreign cars stated that a condition has arisen whereby foreign cars are not handled in accordance with the present car service rules, that under these conditions, during a slump in business, foreign cars are back-hauled thousands of miles over the various circuitous routes the cars may have traversed under load in order to finally reach their home. The American Railway Association Committee was urged to consider the revision of the present car service rules along the following lines:

All equipment, except box cars, shall be considered as special to the line owning and shall be returned to the owners in home route and a penalty applied for any misuse sufficient in amount to make the diverting of a car prohibitive.

Box cars may be loaded in a homeward direction or into home territory, regardless of the route via which they were received.

Foreign box cars belonging to a direct connection must be delivered to and received by that connection, regardless of whence they came, except cars received in switch service.

All box cars of individual ownership must be accepted by owner at any junction point offered.

Foreign box cars belonging to a road with which the holding road has no connection must be loaded for home or in a homeward direction or into home territory, regardless of whence they come, with the exception of cars received in switch service. Foreign box cars may be returned to the delivering line empty if in a homeward direction, but not otherwise.

In the event there is absolutely no loading of any kind that will take a foreign box car loaded in a homeward direction or into home territory, then provide a means whereby it may be short-routed empty.

Make a reciprocal arrangement whereby one road will haul cars for another empty and equalize on a mileage basis through the medium of some kind of a clearing house. Such an arrangement will provide that cars hauled empty will always be hauled in the right direction, instead of in the opposite direction as at the present time.

The paper and the resolutions were thoroughly discussed at the meeting, but inasmuch as the recommendations involved some radical changes in present methods and the establishment of more and better facilities for making repairs to foreign cars, it was decided to refer the matter to the general managers of the railroads entering Chicago for the purpose of taking a letter ballot. A motion was also adopted recommending the establishment of central repair shops.

As a result of the meeting and discussion, arrangements have been made with the Chicago Junction Railway to take bad order cars owned by lines not having an entrance to Chicago and repair them under M. C. B. rules at owner's expense. An agreement was also reached by which empty cars delivered to fill orders, when properly side-carded as evidence of inspection, will not be returned, but will be repaired by the receiving line, the expense to be charged to the owner, so that they can be used for loading.

SLIDE VALVE LUBRICATION ON THE BUFFALO, ROCHESTER & PITTSBURGH

Conditions attending a leak from a steam chest or a cylinder make it evident that the escaping steam carries oil in suspension, and the generally accepted theory that drops of oil from the lubricator become volatilized and widely diffused in the steam in the steam chests and cylinders thus seems to be confirmed. Accepting this as well established, what portion of the steam supplied to the steam chest touches the face of the valve, or that portion of the seat upon which the face of the valve travels? Probably only a very small percentage, and certainly the steam which does come in contact with the face of the valve and the seat carries no more oil than the much greater portion of the steam which does not come in contact with the frictional surfaces. Moreover, steam which comes in contact with the frictional surfaces probably does not deposit all the oil which it holds in suspension.

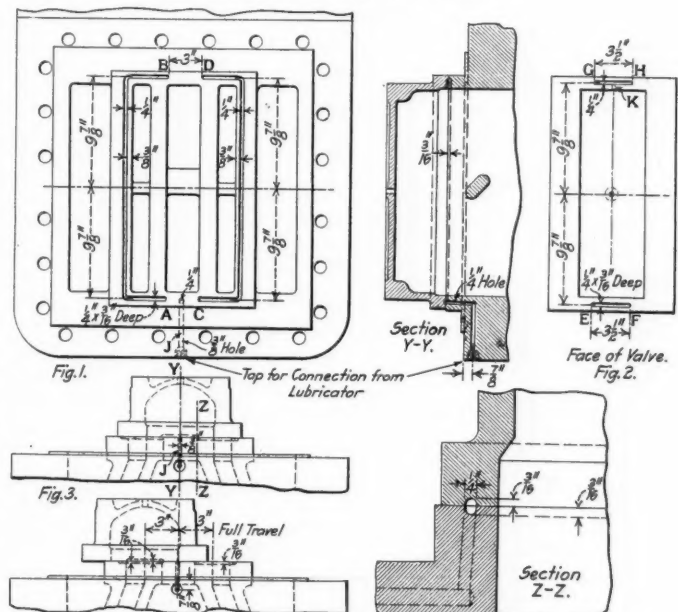
What percentage, then, of the oil supply can we believe performs the desired function of eliminating friction? Some portions of the slide valve face and seat are never exposed to the steam supply. What portion of the infinitely thin layer of oil which we assume is deposited by the steam supply in front of and behind the slide valve is drawn under the valve by its movements, to those unexposed frictional surfaces? Consideration of these questions seemed to indicate the advisability of improvement in the methods of conducting lubrication to the face and seat of slide valves, and the method described herein was devised and thoroughly tried out on the Buffalo, Rochester & Pittsburgh.

Two grooves, *AB* and *CD*, Fig. 1, were chipped in the valve seat and grooves *EF* and *GH*, Fig. 2, were chipped in the face of the valve; *K*, Fig. 2, is a small groove opening from *GH* into the exhaust cavity. With the valve in its central position, the two grooves in the valve face just overlap the ends of the grooves in the seat as shown in Fig. 3, the groove *EF* in the outer side of the valve also lapping the inlet *J* from the lubricator and thus permitting oil-charged steam from the lubricator to flow through both grooves in the seat and into the exhaust passage through grooves *GH* and *K*. The ends of the grooves are so located that communication between the lubricator and either of the grooves in the seat is cut off whenever the groove is not covered by the valve face. The face of the valve is thus brought into contact with saturated steam and oil, the richness of the mixture in oil being much greater than that obtained when the same amount of oil is introduced into the main steam supply and direct application to the frictional surfaces is obtained. Positive and regular feed is insured because

the flow of steam and oil from the lubricator is opposed only by the pressure in the exhaust cavity and by the friction in the pipes and grooves.

A Consolidation type locomotive, No. 331, with cylinders 21 in. by 28 in. and a tractive effort of 37,000 lb. was provided with this arrangement Feb. 1, 1914, and the usual opening for introducing oil into the steam chest was plugged. The engine was run with saturated steam until shopped for general repairs in January, 1915, during which period numerous test runs proved conclusively that the valves could be properly lubricated under maximum steam-chest pressure and short-travel conditions.

While heavy boiler repairs were being made, a superheater was applied to the locomotive, and on June 1 it was turned out of the shop, since when the performance, using superheated steam, has thoroughly justified the belief that this method of oil distribution would make it possible to successfully operate slide-valve locomotives using superheated steam. Up to July 27 the engine had made 5,000 miles without failure or repairs of any sort to the valves. The bearing surfaces of the valves and seats have developed a fine polish and are perfectly normal in contour. The reverse lever can be handled with the same ease as when saturated steam was used with this system of lubrication, and the engine is operated with full steam-chest pressure whenever operating conditions permit. At no time has it been difficult to hold the reverse lever by hand with the latch disengaged and the throttle wide open. The coal and water consumption show a great reduction when compared with that of similar engines using saturated steam as was accomplished by the use of superheater locomotives equipped with piston valves.



Method of Slide Valve Lubrication in Use on the Buffalo, Rochester & Pittsburgh

During the first 1,500 miles superheat valve oil was used, but the last 3,500 miles have been run with Perfection valve oil, three pints being used during a run of 120 miles in heavy freight service. There appears to be every probability that this allowance can be materially reduced, but as yet no endeavor has been made to determine the minimum amount of oil required, although when using saturated steam it was possible to operate the engine on less oil than was allowed similar engines which were lubricated in the old way.

The steam-chest relief or vacuum valves are plugged and the engine is not provided with a drifting throttle, but in order to prevent the burning of the oil in the steam chest and cylinders and to prevent air or smoke-box gases being drawn into the cylinders, a small amount of steam is supplied through the main throttle while drifting.

This engine has been running regularly in heavy freight service, but on July 24 it hauled an excursion train consisting of

11 well-filled coaches, from Buffalo Creek to East Salamanca, a distance of 60 miles, in two hours, the grade rising 1,200 ft. in the first 40 miles of the run.

This system was developed by H. C. Woodbridge, general manager's special representative of the Buffalo, Rochester and Pittsburgh.

A NEW BRIDGE OVER THE MISSOURI RIVER AT KANSAS CITY

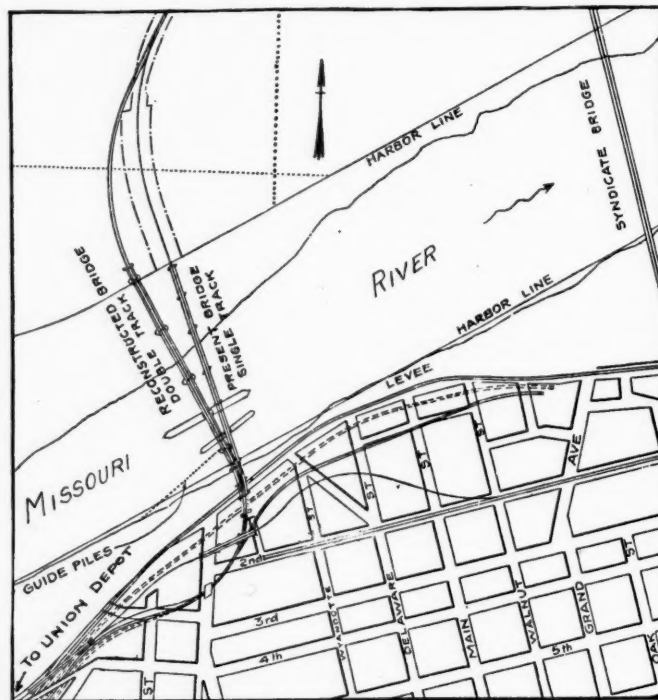
The Chicago, Burlington & Quincy has recently let contracts for a bridge across the Missouri river at Kansas City to replace the old Hannibal bridge, so-called because it was built by the Hannibal & St. Joseph Railway in 1869. This was the first bridge across the Missouri river. It was used for many years by the Burlington, Wabash and Rock Island as an entrance to the old Kansas City Union station, located three-quarters of a mile to the west, and is still used by these roads to reach the new Union station by way of the new Burlington connection around the bluff, south of the old station site. The old structure consisted of single track combination wood and steel through trusses on masonry piers. The superstructure was replaced by Pratt trusses in 1888, which are still in use on the original substructure, although it has been necessary to reinforce the piers extensively with iron rail bands. It is also used as a highway bridge, a plank floor being provided on the track deck and teams being allowed to cross the bridge between trains.

The new structure, which will cost about \$1,500,000, will be located adjacent to the old bridge. In fact, the south ends will coincide, the only difference in position being brought about by the fact that the new bridge will be a square crossing, while the old one makes an angle of about 15 deg., with a perpendicular to the river channel. In consequence the north end of the new bridge will be about 250 ft. up stream from the end of the old structure. There will be a 450-ft. draw span near the south side of the river with two 330-ft. fixed spans to the north, and one 120-ft. span on the south, making five waterway openings between harbor lines as against six in the old bridge. With the exception of the 120-ft. span the superstructure will consist of sub-panel through Pratt pin-connected trusses. There will be two decks, a lower one for two railroad tracks 13 ft. center to center, and an upper deck for a highway 25 ft. above the base of rail of tracks. Low iron is 26.25 ft. above standard high water and 40.53 ft. above standard low water. The clear width of the channel opening on either side of the center pier of the draw span is 200 ft. at standard low water.

The 120-ft. span south of the draw consists of a deck girder

means of a 4 deg. 30 min. curve on an embankment. The viaduct approaches are on 6½ per cent grades.

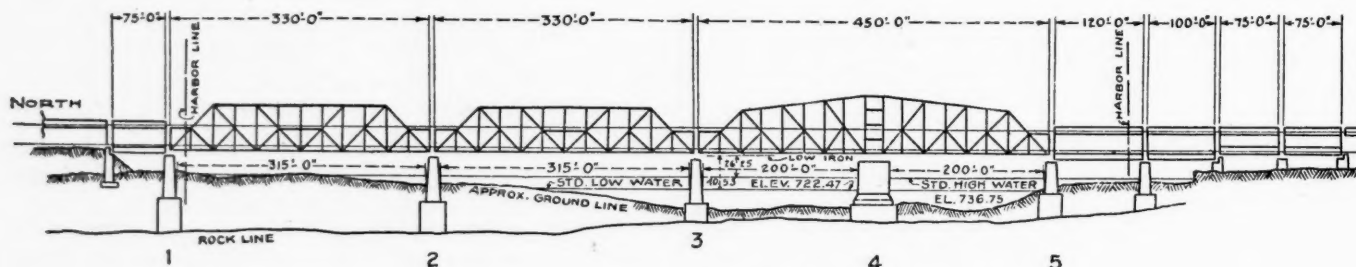
The design involves the use of high loading and high unit stresses, following the same idea as that used on the Metropolis bridge over the Ohio river. The live load on the trusses consists of two Cooper's E-90 engines followed by 7,500 lb. per ft. of track for the near track, and a uniform load of 7,500 lb. per ft. of track for the far track, except on floor, hangers and sub-diagonals, where the load is two E-90 engines on each track. The designing stresses under full dead load, live load and impact are 35,000 lb. per sq. in. for nickel steel eye-bars, 25,000 lb. per sq. in. for tension and 30,000 lb. per sq. in. for compression



Map Showing Location of Bridge

for silicon steel to be used in all main members of the truss spans other than eye-bars, and 18,000 lb. per sq. in. for medium steel to be used in all other parts of the bridge. The steel work amounts to 5,500 tons, and will be furnished by the American Bridge Company.

The piers for all of the main spans will be carried to rock, which is located from 70 to 130 ft. below the base of rail, the



Elevation of the Kansas City Bridge

span for the lower deck and a through girder span for the highway deck. South of this span there will be an approach, consisting of a 100-ft. span of the same type and two 75-ft. through girder spans for the railroad deck, as well as for the highway deck. Access to the latter will be had by means of a viaduct incline downward to a connection with Broadway. North of the bridge there is a 75-ft. approach span, consisting of deck girders for the tracks and through girders for the highway, the latter being continued on a viaduct incline downward on the east side of the railway embankment. The north railroad approach connects with the present alignment 1,300 ft. to the northeast by

surface of the rock dipping downward from south to north. Pneumatic foundations will be necessary. The substructure for the south approach will be on rock foundation, as the elevation of the rock rises rapidly south from the river bank. The north approach is located on flat river bottom and will require pile or spread foundations. The Union Bridge & Construction Company, of Kansas City, have the contract for the substructure and will commence work as soon as the present high water subsides. The design and construction of the bridge is under the direction of C. H. Cartledge, bridge engineer of the Burlington, who furnished the information given above.

Western Railways Get a Small Rate Increase

Advances Allowed on Coal, Coke, Fruit and Vegetables, Denied on Grain, Livestock and Packing House Products

The Interstate Commerce Commission handed down its opinion in the Western rate advance case on Tuesday, August 11. The report is "By the Commission." It held:

1. Proposed increased carload rates on grain and grain products considered as one commodity not justified.
2. Proposed increase from 30,000 lbs. to 40,000 lbs. in the minimum carload weight of grain products justified.
3. Proposed increased carload rates on live stock not justified.
4. Proposed increased carload rates on packing-house products and fresh meats, except as indicated between points on the Missouri River, not justified.
5. Proposed increased carload rates on fertilizer and fertilizer materials not justified.
6. Proposed increased rates on bituminous coal, except as to South Dakota points, justified. The rates on coke here proposed, which are the same as on coal, justified.
7. Proposed increased carload rates on brewers' rice and less-than-carload rates on domestic rice justified.
8. Proposed increased carload rates on broom corn not justified.
9. Proposed increased import rates and proposed increases in carload minima from Gulf ports justified.
10. Proposed increased carload rates on fruits and vegetables justified.
11. Proposed increased carload rates on hay and straw, where not in excess of Class C, justified.
12. Proposed increased any-quantity rates on cotton piece goods, and proposed increased carload rates from points in Texas, not justified.

Commissioners Daniels and Harlan filed dissenting opinions. They agreed with all the increases granted, but contended that others should have been allowed. The report of the commission, including the dissenting opinion, requires a pamphlet of about 190 pages. Following is a brief abstract of some of the more important parts of the report, the language of the commission being preserved so far as possible:

The carriers base their claims to additional revenue upon the grounds of their financial needs and the downward tendency of their net earnings in this western region and contend that commodities singled out by them to bear the proposed increases are not now carrying their equitable part of the costs of transportation.

Both of these contentions are traversed by the protestants, comprising both the state commissions of a number of the states primarily affected and individual shippers. Generally speaking, the protestants contend that the financial condition of the carriers does not warrant the proposed increase in revenue; that the last fiscal year was abnormal, both in regard to transportation and other branches of industry; and that in recent years the carriers in large measure have built up their properties to a higher standard out of operating revenues, and have thereby produced a showing which in so far as it is unfavorable is in great measure illusory. In general, it cannot be said that the protestants in the instant case have alleged that conservation of the carriers' revenues can be effected by the practice of more rigid and appropriate economies, but rather that the carriers have realized and are realizing the benefit of adequate revenues; that their real net revenues have been masked by new methods of accounting; that charging against income what is asserted to be a proper charge to capital and the practice in the past of conferring valuable concessions upon shareholders of record have resulted in an understatement of the real earnings of the carriers.

It was not asserted that the rules of the commission requiring that additions and betterments be charged to capital account were being violated, nor that the higher standards are not justifiable, but rather that the mere change from a lower to a higher standard involved increased operating expenses even under the accounting rules of the commission.

The following table is compiled as indicating roughly the annual increase in the carriers' revenue were the tariffs involved in this proceeding allowed to go into effect:

Grain and grain products	\$2,940,237
Live stock	1,500,000

Packing-house products and fresh meats	1,500,000
Hay and straw	175,000
Broom corn	31,623
Coal	1,226,122
Fruits and vegetables	134,265
Rice	42,000
Import rates	55,000

Total\$7,604,247

For the 41 roads included in the carriers' exhibits the total freight revenues received in the fiscal year 1914 were approximately \$641,000,000. It appears, therefore, that the increases proposed in the present proceeding would fall within 2 per cent of the total freight revenue.

Inasmuch as the work of railroad valuation by the commission has not as yet sufficiently advanced to afford definite knowledge of the true value of the railroad properties involved in this proceeding, we are confronted at the outset with the problem of finding an appropriate method, if such there be, which might aid in determining the reasonableness and propriety of the proposed increased rates. It is hardly necessary to say that the duty of determining the justice and reasonableness of rates devolved by law upon the commission prior to the authorization by Congress of the work of valuation, and that the commission has been obliged to determine this issue without having available for its use authoritative valuations of the carriers' property. In approaching this problem we shall first study variations in the operating ratio for recent years. We shall next analyze the investments of carriers since 1907 and the concomitant variations in the revenue returns. Our accounting rules have been in force since that date, and the statements of additions and betterments to property and the contemporaneous revenue returns are believed to be substantially accurate. We shall thereafter analyze the variations in the carriers' revenues as compared with the book cost of their property, a procedure hitherto employed, but always with acknowledgment of the unverified character of the book cost in 1907 and the infirmity which its inclusion in subsequent figures of book cost entails. Next in order will come an analysis of such evidence as is of record with reference to valuations made by state commissions, by the carriers themselves in some instances, and by engineers who have testified in this case. Finally, before undertaking the study of increases proposed on individual commodities, we shall scrutinize the evidence bearing upon the financial experience of the carriers as regards their returns and their credit.

THE OPERATING RATIO

The operating ratio for any year, as that term is technically employed in the commission's statistics, is the ratio of that year's operating expenses to operating revenues. That there has been an increase in the operating ratio for the period 1901-1914 is incontestable. The fact is proof primarily that of every dollar in revenue received the amount remaining in the carriers' hands after charging operating expenses, taxes and rentals, is for the 26 roads approximately 20.5 cents in 1914 as against 31.3 cents in 1901.

Employing the basis of the equated traffic unit, all of the comparisons coincide in showing that the revenues received per unit show a decline in this period and that the expenses incurred per unit show an increase. Of perhaps equal significance is the fact that the percentage of variation between the showing based on the carriers' data, the protestants' data and the commission's data is slight.

The increase in expenses per equated traffic unit ranges from 0.56 mills shown by the Commission's figures to 0.62 mills and 0.63 mills shown respectively by the figures of the protestants and the carriers. We shall proceed to canvass the causes contributing to this increased cost under the following heads: Labor costs, taxes, maintenance costs, and various miscellan-

ous items, including, among others, fuel, train supplies, loss and damage claims, and injuries to persons.

Labor.—The commission has had constructed a table which indicates for the period 1901-1914 the ratio of total labor compensation to total operating revenues and to total operating expenses. The table, No. 4, is subjoined.

Year	Railroad witness Wetling, 41 roads. Ratio of labor compensation to total operating revenues. ¹	Commission's compilation, 19 selected roads. ²	
	Per cent.	Ratio of labor compensation to total operating revenues. ⁴ Per cent.	Ratio of labor compensation to total operating expenses. ⁴ Per cent.
1901.....	38.2	36.5	58.5
1902.....	39.0	37.4	60.2
1903.....	41.3	39.0	62.3
1904.....	41.7	39.9	60.8
1905.....	40.8	39.5	60.5
1906.....	40.5	38.9	60.1
1907.....	40.7	39.6	60.4
1908.....	43.5	41.5	59.7
1909.....	41.6	40.3	59.3
1910.....	42.9	41.5	58.2
1911.....	43.1	41.0	57.4
1912.....	45.0	42.7	58.8
1913.....	44.2	42.4	60.3
1914.....	44.4	42.8	60.0

¹ As shown by pay rolls and thus includes certain labor compensation not chargeable to operating expenses.

² Including the Atchison; Rock Island; Alton; North Western; Burlington; St. Paul; Minneapolis & St. Louis; Katy; Missouri Pacific, and Frisco.

³ Labor compensation includes general officers.

⁴ Labor compensation excludes general officers.

⁵ Chicago, Milwaukee & St. Paul not included.

Taxes.—The amount paid in taxes by the carriers parties to this case shows a material increase as between 1901 and 1914. These amounted in the beginning of the period to about 3¼ per cent of the operating revenues, but in 1914 they absorbed over 4½ per cent.

Maintenance.—There centered around the question of the interpretation of expenses for maintenance more acute differences between the carriers and the protestants than about any or all other items of cost. While the operating expenses have progressively increased in proportion to revenues, with occasional yearly recessions, the relative increase is most marked in the matter of maintenance of equipment. The increase in the ratio of this item to total revenues seems largely traceable to the substitution of heavier locomotives and cars of steel or of steel underframe construction. Some considerable part of the increased outlay upon maintenance of equipment would appear from the testimony to be traceable to the injury occasioned by the use of the heavier steel cars in connection with the older wooden equipment.

Some of the carriers' witnesses contended that heavy repair costs were entailed by the keeping in service of old equipment which their financial condition precluded them from scrapping and replacing by new cars. But it seems not unlikely that while the transition period during which light and heavy equipment are jointly used may necessitate unusually heavy repairs, the repairs normally demanded by the heavier equipment may be larger than had been estimated when its use was projected.

Apart from the question reserved for later discussion of the carriers' practices under the Commission's accounting rules prescribed in 1907, it cannot be affirmed with any degree of certainty that the increased charges for maintenance of equipment are excessive or undue. They seem rather to be a consequence of the general tendency to introduce heavier equipment, of the contemporaneous use of equipment, old and new, and in measurable degree attributable to the carriers' interpretation of the demand for transportation facilities of greater carrying capacity and of greater tractive power than formerly in vogue.

Conclusion.—Unless material modification is required by considerations arising from changes in accounting, or considerations due to financial maladministration of certain carriers included in the groups of roads here studied, the conclusion is substantiated that the attested increase in the operating ratio since 1901 must be attributed primarily to increased costs, each operating in different degree, but practically all in the same

direction, incurred by the railroads in the handling of traffic.

The accounting rules of the Commission, it is alleged by the protestants, allow a certain latitude of construction by the carriers whereby when improvements such as reballasting or laying of new ties are made, some part thereof may be charged to operating expenses. While admitting the possibility of such practices, the moderate increase since 1907 in operating expenses under maintenance of way and structures and the few specific instances where betterments were covered by charges to operation would seem to render it unlikely that any very appreciable effect from this particular accounting practice has affected the operating ratio since that date. Similarly it was urged that car and locomotive reconstruction affords an opportunity within the Commission's accounting rules to charge what are essentially betterments to operating expenses. As indicated previously, we are of opinion that the increased cost for maintenance of equipment is mainly to be ascribed to other causes. The increase in the operating ratio has been a real and not an apparent increase, and is due mainly to augmented operating costs properly charged.

There remains to be mentioned the possibility that particular carriers by reason of financial mismanagement reflected in their operating methods have been uneconomical and wasteful in expenditure, and have thus unnecessarily increased their operating ratios. It does not appear that any uniform relationship can be traced between the present level of the operating ratios of carriers whose financial administration has been culpable and of the remaining carriers. Similarly, instances of notable increases in the operating ratio do not seem to be confined to roads such as the Rock Island or the Frisco. The negative conclusion reached in this connection is but confirmatory of the fact that the general increase in the operating ratio is traceable to deep-seated underlying causes which have affected carriers generally through increased operating costs.

It may be urged that the financial experience of carriers in this period has been that of industry generally; and unquestionably it is true that they often encounter and should be expected to encounter the same ups and downs of financial fortune as affect industry at large. A complete comparison of the relative prosperity of the carriers as against industries in general is not possible from data of record. But, there is force in the consideration that public service industries are under some disabilities from which private industries are exempt. The former may not discontinue operation even though net earnings decline or vanish; nor may they meet rising costs with as free a hand as other industries which advance their prices without the possibility of governmental restraint. Transportation, moreover, unlike many branches of manufacture or commerce, is a quasi public function, indispensable to industry generally. So long as the service is intrusted to corporate administration and the funds supplied by private investors, revenues sufficient to afford a return which will adequately remunerate the investment and secure the facilities required by the community have a justification which does not equally attach to every branch of private undertaking.

RETURN ON INVESTMENT

The rates at present under consideration may be gaged in a measure by comparing recent additions to the carriers' road and equipment with the concomitant changes in their net operating income. The only continuing inducement to invest additional capital in any line of industry is the prospect of net returns. If experience discloses that the return expected is small, the incentive to further investment will correspondingly decrease. If experience demonstrates that increased investment fails, over a term of years, to yield an increased return, the inference is either that the investment was ill judged and not calculated to serve the public, or that the price of the service has not been sufficient to allow an adequate return. The addition of increased income affords a percentage return upon increased investment which for the 41 roads in the carriers' exhibit amounts to 1.2 per cent, and for the 26 roads in the

Commission's compilation, to 0.7. It is, of course, true that the additional investments referred to have been added to or blended with the carriers' pre-existing property, and that no separate or physically distinguishable return can be traced specifically to the last \$1,000,000,000 added to road and equipment.

RETURNS ON BOOK COST OF PROPERTY

The unverifiable character of cost of property standing on the books of the carriers when the Commission's accounting rules were prescribed in 1907 has already been referred to. Subsequent outlay for specific additions and betterments as reported annually by the carriers may, in general, be accepted as more accurate. The basis of book cost, in default of the completion of the official valuation, may be employed, as it has been in the past, as a usable basis for a study of the course and tendency of the returns. The operating income less rentals shows a maximum return upon the cost of road and equipment in the fiscal year 1907. The general level for the six preceding years is higher than for the subsequent period. Roughly speaking, for the 41 roads as a whole, the level for the period 1901-1907 was approximately 5 per cent; and for the subsequent period of 1907-1914 about $4\frac{1}{4}$ per cent.

In view of the facts that the roads covered by the valuations which appear in the record are not sufficiently inclusive, and that the details of methods adopted in making the valuation are not of record, we have no sufficient evidence, taking the case as a whole, upon which to make a finding as to the fair value of the property devoted to the public service of transportation by the carriers which are here seeking an increase of rates.

The engineer of the Minnesota Railroad and Warehouse Commission testified as to value of various roads, using valuations made by several state commissions as his basis, and correcting in numerous details these valuations to accord with his own views.

Without detailed analysis of the methods of this witness, it may be said that he takes the actual market value of land without a multiplier or severance damage, in this way reducing the item of land values in Wisconsin, for example, about 45 per cent. He increases the Wisconsin depreciation of ballast from 20 per cent to 28 per cent; and likewise the Wisconsin depreciation of track laying and surfacing from 20 per cent to 32.72 per cent. For engineering and correlative labor he allows but 1.7 per cent as against 2.9 per cent allowed by the Wisconsin Tax Commission. Such items as interest during construction, organization expense, and contingencies he eliminates entirely on the ground that nothing but "actual property in existence and devoted to the public use" should be included. He likewise makes no allowance for stores and supplies or for working capital.

Without deciding here what are proper items to include in a valuation for rate-making purposes, it is evident that the methods of this witness are extreme in their rigor, resulting in every case in decreasing the valuations fixed by state commissions. We cannot accept the valuations proposed as a tenable basis for ascertaining the fair value of the roads in question.

THE FINANCIAL EVIDENCE

The progressive increase in the ruling rate of interest since 1900 has been demonstrated beyond question, and we do not deem it material to go behind the fact into the causes which have operated to bring about this increase. Railroads in common with industries generally have had to pay a rate of interest higher in 1914 than in 1907, and generally higher in 1907 than in 1900.

From the financial evidence we find that the credit of these carriers as a whole has not suffered an impairment not common to comparable industrial enterprises; that in common with other borrowers, corporate and governmental, these carriers are required to pay on the average a higher percentage than here-

tofore for the use of capital; that these carriers in common with comparable industries generally are paying higher prices for many materials and higher wages for most kinds of labor; that these carriers in meeting increased costs with increased prices for service are subject to certain disabilities not similarly encountered by many other industries; that the relatively equal depression of the carriers' credit with credit generally is not evidence of the adequacy or inadequacy of their present net revenues; that their net corporate income cannot be accepted as a measure of the adequacy or inadequacy of present rates; and that the increasing percentage of bonds to their total capital obligations indicates a growing disinclination to invest in their stocks and a growing unwillingness to accept the prospect of dividends as a sufficient incentive to assume the risks of railroad proprietorship.

From the preceding study of the trend of the operating ratio of the carriers here before us we have found that the relative profitability of their business, taking the roads as a whole, has declined since 1901, and that the main cause effecting this result has been an increase in expenditures not offset by an increase in receipts.

GRAIN AND GRAIN PRODUCTS

By the tariffs on grain and grain products suspended in this proceeding the respondents proposed increases over current rates of equal amount on grain and the products thereof. The increases suggested are generally 1 cent per 100 lb., and apply as local and proportional rates from most of the region comprised within southwestern tariff committee and western trunk line territories. No increase is proposed in the rates from Minnesota, South Dakota, and northern Iowa to Duluth, Minneapolis, or Milwaukee. Increases are also proposed in export rates, and in the carload minimum on grain products from 30,000 to 40,000 lb. From points in defined territory in northern Iowa, southwestern Minnesota, and southeastern South Dakota to southwestern Missouri river points the increases proposed are from 2 to 4 cents per 100 lb., this excess over the general basis being intended to remove existing disparities in such rates as against rates from the same points to Chicago. The Minneapolis & St. Louis Railroad proposes tariffs establishing through rates to these southwestern Missouri river points in lieu of the existing combinations of locals, the result of which would be reductions ranging up to 4 cents per 100 lb.

The carriers have based their justification for increases upon the unity of the grain and the grain products and upon the unity of the whole territory involved. We find and conclude that they have not justified the tariffs increasing rates on grain and grain products.

An order will be entered directing the respondents to cancel the tariffs here involved proposing increased rates on grain and grain products. Such order will be without prejudice to the right of the Minneapolis & St. Louis Railroad to publish through rates to southwest Missouri River points in lieu of and lower than present combinations of locals. The carriers have justified and may establish increased rates on grain and grain products from points in northern Iowa, southwestern Minnesota, and southeastern South Dakota to Kansas City and related points reasonably and relatively conforming to rates from such points to Chicago.

LIVE STOCK

The proposed increased rates on live stock apply from points in western trunk line, trans-Missouri, and southwestern tariff committee territories, to Fort Worth, Tex., Oklahoma City, Okla., Wichita, Kans., Chicago and Peoria, Ill., and to markets on the Missouri and Mississippi rivers. From Missouri River points to Chicago, St. Paul, Peoria and St. Louis the amount of the proposed increase is generally 2.5 cents per 100 lb. In an effort to make a general rate realignment some rates are not changed, some are increased less than 2.5 cents, and a few more than 2.5 cents. The adjustment proposed makes the rates from Sioux City, Iowa, the same as from Omaha. This adjust-

ment from Sioux City would make the proposed increase in rates on cattle and on sheep in double-deck cars 1.5 cents and would reduce the rate on sheep in single-deck cars by 2.5 cents per 100 lb. From Kansas City to St. Paul no changes are proposed except on sheep in single-deck cars, on which there is an increase of 2.5 cents per 100 lb., nor are changes proposed from St. Paul to Chicago except in the rate on horses. From points in Iowa the proposed increases grade down from 2.5 cents in western Iowa to 0.7 of a cent per 100 lb. in eastern Iowa. Rates for transporting horses which have been on a per car basis, it is here proposed to conform to the normal live stock basis expressed in cents per 100 lb. Rates from interior Missouri points it is proposed to increase similarly to those from the Missouri River. From southwestern territory the increases proposed are generally 3 cents per 100 lb. on cattle, hogs and sheep, and 5 cents, or \$11.50 per car, on horses.

The rates on stock cattle moving from Texas to Oklahoma for feeding it is proposed to increase \$10 per car; to points in Kansas, \$5 per car, and other stock cattle rates it is sought to increase 5 per cent. This will average about \$5 per car. All trainload and 10-carload rates on stock cattle are, as they ought to be, eliminated.

The rates on cattle, hogs and sheep from New Orleans to points in western trunk line and trans-Missouri territories it is proposed to alter from the per car basis to the 100-lb. basis, but the change would result in practically no increase in transportation charges. No increases on live stock have as yet been obtained in intrastate rates or in rates controlled by the intrastate factors.

Taking into view our former decisions, the material modifications in the revenue statistics presented which would result from the segregation of state from interstate earnings, the relation of interstate to intrastate rates, and all the other facts of record, it is our judgment and determination that the carriers have failed to establish the propriety of the proposed increased rates on live stock.

The elimination of trainload and multiple carload rates has been justified.

PACKING-HOUSE PRODUCTS, ETC.

Claiming that market competition and other causes have tended to make present rates subnormal and that special services and costs incident to the traffic justify higher rates than the average on all commodities, the respondents have in this proceeding proposed increases in the rates on packing-house products, fresh meat, fertilizer and fertilizer materials, and green salted hides. Rates given are in cents per 100 lb. unless otherwise stated.

Packing-house products and hides usually take the same rate, and in western classification are fifth class; fresh meats are third class, and fertilizer and fertilizer material are class E. "Packing-house products," except where otherwise stated, will include hides. The proposed increases in the southwest are on a different basis from those in the remaining territory. Including the territory as a whole, increases are proposed from Ft. Worth, Tex., Oklahoma City, Okla., Wichita, Kans., from the packing plants on the Missouri River, from St. Paul and Austin, Minn., and points in Iowa to the Mississippi and Ohio rivers and to Chicago.

Generally the increase proposed is 3½ cents on both packing-house products and fresh meat; and in the proposed rates on packing-house products the fifth-class rating is usually fixed as a minimum.

Upon the whole record we are of opinion and find that the proposed rates on fresh meats and packing-house products between the Missouri River points named have been justified to the extent that they do not exceed the following, in cents per 100 lb., in carloads.

	Packing-house products.	Fresh meats.
Between St. Joseph, Mo., and Kansas City, Kans.....	10	12.5
Between South Omaha, Nebr., and Kansas City, Mo.....	16	19.5
Between Sioux City, Iowa, and South Omaha, Nebr.....	10	12.5
Between Sioux City, Iowa, and Kansas City, Mo.....	20	23.5

The most of what was stated in our conclusions with respect to live stock applies to packing-house products. We must find that, with the exception which we have noted as to the rates on fresh meats and packing house products between the Missouri River points, the proposed increases on packing-house products, fresh meats, hides and fertilizers, have not been justified.

COAL AND COKE

It is proposed by tariffs under suspension to increase the rates on bituminous coal from mines in Indiana, Illinois, Kentucky, Alabama, Missouri, Arkansas, Oklahoma, Kansas, Colorado, New Mexico and Iowa, and from the docks on Lakes Michigan and Superior when shipped to points in western trunk line and southwestern tariff committee territories. Some reductions are proposed and the increases are either 5 or 10 cents per ton. The increased revenue is 5.36 per cent of the present revenue on bituminous coal.

From the facts of record we are of opinion and find that, with the exception of rates on coal to points in South Dakota, the proposed increased rates on coal have been justified, and the orders of suspension relating thereto will be vacated.

RICE

The carriers propose increases on both domestic and imported brewers' rice from the Gulf ports and Louisiana, Texas, and Arkansas rate points to basing points on the Missouri, Mississippi and Ohio rivers, and to the interior cities, to which the rates are made on these basing points, continuing the present minimum of 40,000 lb. The increases in the domestic rates range from one-half to 10½ cents, while those on import rates are generally 5 cents per 100 lb.

We are of opinion and find that the rate proposed on brewers' rice in the tariffs under suspension have been justified. The question of the proper relationship between the import and the domestic rates is, however, before us in another proceeding.

Clean rice. The proposed increases are in the less-than-carload rates from Arkansas, Louisiana and Texas points to the Mississippi river and Ohio river crossings, to Chicago and points basing thereon, to Missouri river points and stations west, including Utah common points and Colorado common points; to the Southeastern territory, omitting New Orleans as a point of origin; also from Arkansas to certain stations in New Mexico. The class rates resulting from this cancellation represent increases which range from 7 cents to 62 cents per 100 lbs.

We are of opinion and find that the respondents have justified the proposed cancellation of the existing less-than-carload commodity rates on clean rice, and an order will be issued vacating the suspension of those cancellations.

BROOM CORN

The rates proposed in this proceeding are generally 5 cents per 100 lbs in excess of the existing rates, with the third class as a maximum. No increase is proposed between Kansas points and the Missouri river. We are of the opinion and find that proposed rates upon broom corn under suspension have not been justified.

IMPORT RATES

The tariffs here involved contain import rates from the Gulf ports of Pensacola, Mobile, Gulfport, New Orleans, Port Arthur and Galveston. While rates on some other commodities are sought to be increased, no opposition was offered to the tariffs increasing these import rates except as to those tariffs proposing increases in the rates on fuller's earth and fertilizer materials.

We are of the opinion and so find that the carriers have justified the increased import rates and the higher minimum carloads, and an order vacating the suspension thereof will be entered.

FRUITS AND VEGETABLES

The carriers propose to increase their carload rates upon fruits and vegetables from various producing points in the state of Texas to numerous destinations in other states.

The proposed rates applicable on berries, grapes, peaches, pears, plums, melons, vegetables, cabbage and potatoes have been justified.

In the foregoing discussion of the fruit and vegetable rates from Texas we have named only those articles which constitute the larger part of the movement, but we are to be understood as also giving our approval to the proposed rates when applied to the other produce now taking the same rates as the articles mentioned in this report.

HAY

The increase proposed in the rates upon hay is generally 2 cents per 100 lbs., observing class C as a maximum, but no increases are proposed from Kansas points to the Missouri river. From Iowa and Missouri the present increase is approximately from 1 to 1½ cents. From Nebraska, from Kansas where increases are made, and from Oklahoma, the proposed rates are 2 cents in excess of those existing, although this does not bring them up to class C, while from Iowa and Missouri they are on a class C basis.

We are of the opinion and find that the rates on hay proposed in the tariffs under suspension, save for specified exceptions, have been shown to be reasonable, and an order will issue vacating their suspension. Wherever the rates in the suspended tariffs exceed class C, we shall require that they be canceled by the respondents, who may, if they so desire, in such instances file new tariffs wherein the rates on hay and straw shall not exceed class C.

COTTON PIECE GOODS

Upon the whole record we are of the opinion, and find, that the proposed increased rates on cotton piece goods and on sheets and pillowcases from Texas points have not been justified, and the suspended schedules must be canceled.

COMMISSIONER DANIEL'S OPINION

Commissioner Daniel's dissenting opinion covered about 27 pages of the printed report, and the following abstract therefore is extremely brief, consisting mainly of typical paragraphs lifted from the opinion:

In the essential outcome of the majority's report I am unable to concur, believing that on the record the carriers have in general sustained the burden of proof cast upon them by the statute and are of right entitled to increases in rates productive of revenue far in excess of what they are accorded by this decision.

While it is nowhere explicitly stated in the majority report, I am unable to escape the conviction that the reluctance to find that increased rates have been more generally justified is largely rooted in an unwillingness to find that the revenues of the carriers as a whole are smaller than is demanded in the public interest, and also in the belief that the financial exigencies of many of the carriers are traceable to financial maladministration, and that if due economy and integrity had been uniformly observed the difficulty over the attested decline in revenues would have been readily surmounted.

Among the particular carriers involved in this proceeding the Rock Island and the Frisco have recently attained unenviable notoriety by reason of financial mismanagement and other roads parties hereto, such as the Alton, have in the past been wrecked or plundered. There can be no question of these facts. There can be nothing said in extenuation or mitigation of them. And it has therefore resulted that a widespread disbelief exists in the general integrity of railroad management, and that a skeptical attitude has been assumed by many toward the plea advanced that railroad earnings are inadequate and that increased rates are warranted.

It would, nevertheless appear that, while the severest condemnation of these practices should suffer no particle of abatement, the time had at least come to take a discriminating view of the effect of refusing rate increases otherwise just and reasonable because of a widespread resentment as evils perpetuated in the past by dishonest or designing railroad officers or their

allied financiers. Such a policy visits in large measure the same penalty upon the proprietors of a railway conducted with integrity and honesty as upon the luckless shareholders of a looted road. In either case those who suffer from its effects are not those who have profited by the wrongs perpetrated in the past. It is therefore suggested that the appropriate remedy is the prosecution and punishment of the individual offenders, not the continued withholding of adequate rates to the carriers as a whole. In bank management this distinction has in large measure been recognized. The bank official who misapplies or misappropriates funds can do so only under the shadow of the penitentiary. But because there have been numerous instances of banking defalcations, no one would seriously suggest that banks generally should be prevented by law from raising the rate of discount in case competitive conditions warrant. Similarly in considering propositions involving more or less general increases of rates, the question should be judged in the light of the evidence of the adequacy or inadequacy of the carriers' revenues as a whole, and in the light of the reasonableness or unreasonableness of the particular rates proposed, and neither prejudged nor complicated by considerations of individual instances of corporate mismanagement.

The majority report in the instant case, despite the more unfavorable showing made by the Western roads, contents itself with finding that—

the relative profitableness of their business, taking the roads as a whole, has declined since 1901, and that the main cause effecting this result has been an increase in expenditure not offset by an increase in receipts.

Upon a far stronger showing in the instant case the majority report, instead of finding that the carriers' net operating income as a whole "is smaller than is demanded in the public interest," commits itself only to the proposition that the showing of "operating results and financial conditions of respondents" is "considered," and that certain particular increases are or are not justified. In view of the fact that one of the principal contentions, if not the principal contention, in the case was the general inadequacy of the carriers' revenue as a whole, and in view of the fact that the statute requires that whenever an investigation shall be made, it shall be the duty of the commission to report thereon, stating its conclusions, it would seem to be appropriate to enunciate a conclusion upon the question of sufficiency of revenue. The public and the parties to the case are entitled to a clear, unmistakable finding upon this matter.

There are certain additional considerations in the present case which strengthen the conclusion that a finding of inadequacy of operating income is alone consistent either with the pronouncement in the Five Per Cent Case or the facts of record herein. The aggregate freight advances there proposed were estimated to yield approximately \$50,000,000 per annum additional revenue, or about 5 per cent of the total freight revenue. The increases ultimately permitted are estimated to amount to 50 or 60 per cent of that amount. The total increase in freight rates sought in the present case falls below \$10,000,000 annually and amounts to approximately 1.2 per cent of the total freight revenues. Even with the increases asked for in other related proceedings, the total increase in revenue sought would fall within 2 per cent of the total freight revenues for 1914. In other words, the aggregate increase in freight revenue would be both absolutely and relatively far below the increases proposed in the Five Per Cent Case.

Upon the showing of record in this case as outlined in the majority report, and in the light of what was done in the *Five Per Cent case*, it seems to me impossible to avoid the conclusion that the carriers before us have, as a whole, abundantly demonstrated that their operating income is smaller than is demanded in the public interest; and equally impossible to escape the conclusion that the interstate rates should upon proper showing, be increased and that appropriate changes, if required, in state rates, should be made subsequently.

Findings on Miscellaneous Commodities.—As indicated in the majority report, the increase in annual revenue estimated to

accrue, if the proposed rates were justified, amounted to \$7,604,247. The four principal contributors to this amount were (1) grain and grain products, (2) live stock, (3) packing-house products, (4) coal. These four were estimated to yield \$7,166,000, approximately, out of a total of \$7,604,247. The miscellany of minor articles was estimated as capable of yielding but \$438,000 in the aggregate. It is therefore apparent that if a substantial increase in revenue were to be obtained, it would have to come principally from the four major contributors. On only one of the four, and that the smallest, are increased rates found justified by the majority report, and even here only a part, although the greater part, of the proposed increase is accorded. Increased rates are not found justified on all of the minor commodities, broom corn and cotton piece goods being instances in point. The aggregate increases of revenue permitted under the majority report will hardly exceed \$1,600,000, or about one-fourth of 1 per cent of the total freight revenue of these carriers for 1914.

In so far as the majority report finds justified the increased rates on coal, hay and straw, fruits and vegetables, rice, and on certain miscellaneous imported goods, I concur therein, not only on the grounds cited in the majority report, but also upon the ground of the attested inadequacy of the carriers' revenue. I also concur in the finding on broom corn the proposed increased rates are not justified.

In the matter of grain and grain products, it is evident on the record that, taking grain products alone, the proposed increase of 1 cent per hundred pounds is amply justified. The products do not load much more than half as heavily as the grain. The tare weight carried is practically twice as great. The car earnings for the same length of haul are about one-half as great on the product as on the grain. The case presented for the increased rate on grain is more doubtful.

The proposed increase on cotton piece goods appears to me to be justified. The record established that their value per ton is approximately \$600 and that in certain instances they are more valuable than many commodities which take the first-class rate. The increases on cotton piece goods as between various points may be out of harmony with each other, and on that ground their denial may fall within the flexible limit of judgment which belongs to the power to fix rates. But the total increase in revenue to be derived from this increase is not of record, and may not be very material in the aggregate. In the case of live stock and the products thereof the reverse is true. The revenue that the increases would produce is estimated at \$3,000,000 annually, and the principle on which these are denied seems to me to be a novel and a dangerous departure from the established procedure of the commission. Their denial seems to me also to be unwarranted upon the facts of record.

Rates on Live Stock.—It is submitted that these comparisons confirm the accuracy of the conclusion that the present effective rates on live stock are too low.

The majority opinion, however, denies the increase proposed, not specifically because the respondents have failed to meet "the burden of proof to show that the * * * proposed increased rate is just and reasonable," but upon the ground as stated in the opinion of the majority that:

Protestants claim that a large proportion of all live stock here in question moves on state-made rates or on rates controlled by state rates. They further claim that state rates on live stock are generally much more below the level of the interstate rates on live stock than rates on almost any other commodity, averaging perhaps 30 per cent. less. There may be differences of opinion regarding the exact figures, but no one has questioned the correctness of these allegations. Herein is found an important fact which doubtless modifies the surface indications of the above tables very materially. There is no claim made here that the interstate rates on live stock are not adequately remunerative, but rather that the revenues derived both from intrastate and interstate traffic are inadequate.

This novel contention put forward as a reason of denying the increases here sought does not seem to comport with the record

or with the principles frequently announced and hitherto uniformly adhered to by the commission.

Interstate and Intrastate Rates.—It may be conceded that some intrastate rates are lower than some interstate rates, and possibly as to some intrastate rates the expressed opinion of protestants' witness that they are "too low" is correct. But upon this record it can not be affirmed that all intrastate rates, or an average thereof, are generally below interstate rates, and it seems to be conclusively proved that the estimate that 50 per cent of the live stock move on intrastate rates is far from accurate.

But even if the record furnished full and sufficient evidence in support of the allegations which are adopted as the basis of the conclusion of the majority, I could not concur in the holding that the existence of lower intrastate rates requires the commission to condemn increased interstate rates otherwise shown to be just and reasonable. It is true that this commission has always given consideration to state rates. We make comparisons between rates, state and interstate, for the purpose of deciding the question of the reasonableness of rates under investigation. We may condemn an interstate rate which from a comparison with intrastate rates voluntarily maintained by the carriers appears to be unjust and unreasonable, but in so doing we condemn the rate because it is unjust and unreasonable.

What the majority proposes to do is to deny increases in interstate rates because lower intrastate rates have not been increased and that in a case in which it is shown that applications for increases in certain state rates are pending. It is to be assumed that state tribunals will do their duty, and that if state rates are too low, they will permit them to be increased. Should these state tribunals fail to act, then in a formal complaint where the issue is directly presented and where the states may, if they choose, be heard, this commission has the authority and duty to require the removal of any undue discrimination against interstate commerce that may be shown, and in doing so the commission is not bound to reduce interstate rates "below what it may deem to be a proper standard fair to the carrier and to the public."

Inadequacy of Revenues.—I am individually of opinion that our duty in the present case requires us in frankness to make a finding upon the general issue of the alleged inadequacy of the revenues of the carriers collectively. The carriers, the protestants, and the country are entitled to know the conclusion of the Commission upon this point, and not to be left with a confusing mass of detailed evidence and isolated conclusions upon single matters involved therein. The three previous general rate advance cases have unquestionably held that the Commission may make a finding upon this general question and may employ such a finding to determine, in connection with other relevant testimony, the justice and propriety of permitting particular increased rates to become effective. In the present case the general issue is simply not met, and in passing upon particular rates proposed to be increased a novel doctrine is for the first time invoked to disallow increased rates save where the specific evidence relating thereto makes a refusal manifestly impossible. The failure to follow established premises to their legitimate conclusion only beclouds the principles upon which the Commission may be expected to act in future and leaves nothing certain but uncertainty.

In the matter of rate regulation and fixation we have reached a point where one of two courses ought deliberately to be chosen and clearly announced. If, despite increased costs not offset by increased revenue, increases in rates are to be denied, except where in individual instances gross injustice would be occasioned by their denial, the carriers ought to be apprised of this policy, so that they may set their house in order, if they can, against such a situation. If, on the other hand, we are to acknowledge in general, what we are perforce compelled to admit in detail, just and reasonable increased rates should be permitted not grudgingly, but with such fair measure of allowance as will indicate that the transportation industry is

entitled in the interest of the public to earnings sufficient to provide a service commensurate with public needs.

COMMISSIONER HARLAN'S OPINION

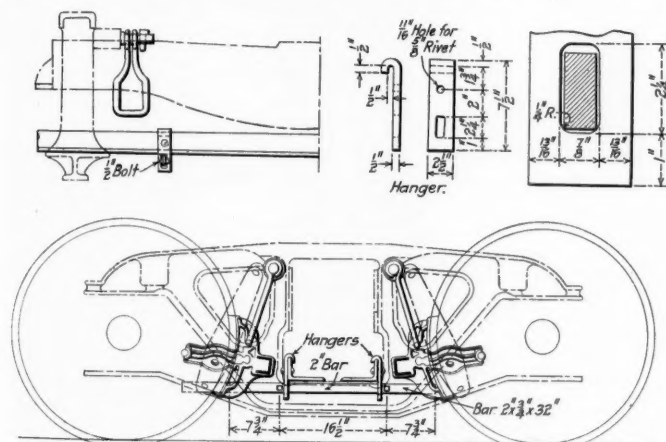
Commissioner Harlan's dissenting opinion is in part as follows:

I concur in the increases approved in the majority report. I share also the conviction of my Brother Daniels that the present rates on live stock, fresh meats, packing-house products, and cotton piece goods are also unduly low and may properly be increased. I am unable therefore to assent to the denial by the majority of the increases proposed by the respondents in the rates on those commodities. While the record shows that the revenue earned upon grain is fairly satisfactory, grain and grain products, generally speaking, have long taken a common rate throughout this territory, and considered together as one kind of traffic, the record, in my judgment, justifies an increase in rates on substantially the basis proposed by the carriers.

Several thoughts are suggested by the immense record before us in this proceeding: (a) Too much time and labor are expended in these recurring rate contests, and some way should be found under legislative authority for arriving at results more promptly than is now possible under our present powers and practices. (b) The Commission should have authority, as we have often pointed out, to fix the minimum as well as the maximum rate. The sincere efforts of carriers toward a fair and nondiscriminatory rate adjustment often fail because of the necessity of submitting to the rates and practices initiated by weaker and more circuitous lines in their pursuit of traffic. (c) The time is rapidly approaching when the public interest will demand a more effective control by the Commission over rates initiated or compelled by state authorities. With respect to a great volume of traffic interstate commerce is now bearing a burden under rates admittedly reasonable that should be spread over state commerce as well. (d) A uniform classification upon a normal basis, applicable throughout the entire country, and with it a normal rate structure in some such form as was prescribed in the *Express case*, 24 I. C. C., 380, having sufficient elasticity to allow for varying operating costs, density of traffic, circuitous routes, competitive and other conditions under which transportation is conducted in different parts of the country, may be possible of attainment, and I am satisfied that some effort looking to that end should be made.

SAFETY HANGER FOR BRAKE BEAMS

A brake beam safety hanger has recently been developed by the Elliott Company, 1807 North Camac street, Philadelphia, Pa.,



Elliott Brake Beam Safety Hanger

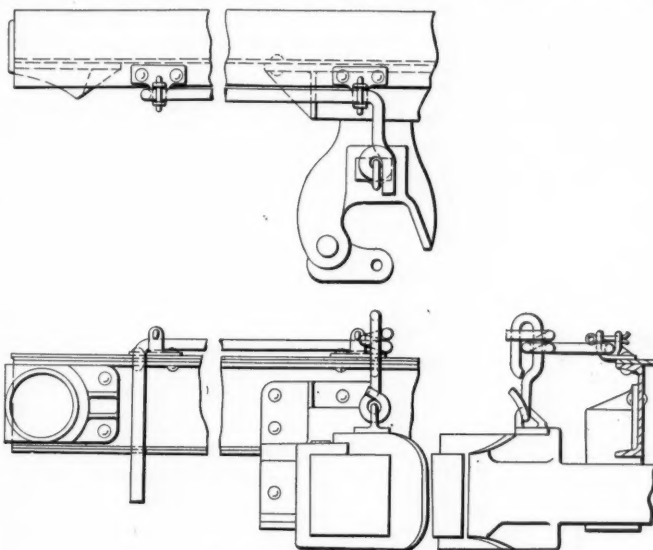
which is extremely simple and offers practically no obstruction to the removal and replacement of the beam.

The safety hanger is attached to the spring plank and under

normal conditions is entirely free from contact with the brake beam or brake head. It consists of a rectangular bar 2 in. by $\frac{3}{4}$ in. in section and 32 in. long. This is supported by two hangers lipped over the vertical flange of the spring plank and riveted to it. These are shown in detail in the drawing. The bar is slipped into place through slots in the hangers and secured by means of $\frac{1}{2}$ -in. bolts placed through the bar at either end just outside of the hangers. In this position the device offers effective support to the brake beam should the brake-beam hangers fail. Should the removal of a brake beam be desired the bar may be slid back at one end as shown in the drawing by removing one of the $\frac{1}{2}$ -in. bolts, in which position it offers no obstruction to the removal of the beam. This safety hanger is in use on the Philadelphia & Reading.

COUPLER RELEASE RIGGING

The purpose in the design of the coupler release rigging shown herewith was to eliminate as many parts as possible and to facilitate the application of the device to the eye of the coupler lock and the end of the car. It is known as the Singlelink release rigging, from the fact that but one piece is used between the uncoupling lever and the eye of the coupler lock, and is manufactured by the National Railway Devices Company, Chicago.



Singlelink Release Rigging

The upper end of the link is made with an elongated eye, which provides for all motion of the coupler relative to the end sill, and the lower end is provided with an open eye.

The uncoupling lever is secured to the end sill of the car by means of open brackets, which are closed by cotter pins. In applying the rigging to the car the lower end of the link is first hooked into the eye of the coupler lock, the lever being then placed in the brackets and secured by the cotters. The lever connection to the link is provided with a tail which serves to prevent the link from turning and sliding out of place.

FERRY TRAFFIC BETWEEN SWEDEN AND DENMARK.—On account of the increased traffic it has been deemed advisable to put another ferry on the Copenhagen-Malmö trade, and negotiations are said to be pending between the Danish and the Swedish State Railway Departments as to which country shall build the new ferry.

COAL USED ON THE EAST INDIAN RAILWAY.—The output of coal at the collieries of the East Indian Railway Company in 1914-15 is reported to have been 367,051 tons, of which 283,084 tons were steam coal. The quantity of steam coal consumed by the undertaking (including coal purchased) in the same period was 449,058 tons, as compared with 424,345 tons in 1913-14.

General News Department

The shop of the Northern Pacific at Livingston, Mont., is running full time for the first time since 1909.

On the 30th of July 31,189 tons of coal were loaded into vessels over the docks of the Baltimore & Ohio at Lorain, Ohio, believed to be a record tonnage handled by one machine.

The Vandalia, the Chicago & Eastern Illinois, the Central Indiana, the Evansville & Indianapolis and the Terre Haute, Indianapolis & Eastern have posted notices informing their employees that they have rejected the provisions of the Indiana workmen's compensation law.

The Georgia legislature, after long discussion, has passed the bill to establish a commission to attend to the leasing of the State-owned railroad, the Western & Atlantic, from the time when the present lease expires, which will be about four years hence. The governor is to be a member of the commission.

The board of arbitration which last spring decided the controversy between the western railroads and their engineers and firemen, regarding wages and conditions of employment, has been asked to reconvene to decide disputed points in its award. Both the Conference Committee of Managers and the officers of the brotherhoods have formulated their interpretations of the award, and there are many points of disagreement.

The five larger railroad brotherhoods held a meeting at Altoona, Pa., last Sunday, at which, it is said, one thousand members were present, the chief business being, according to the reports, a discussion as to how best to secure the election to the next legislatures of men favorable to the bills which the brotherhoods desire to have passed. Another large brotherhood meeting is scheduled to be held in Pittsburgh, August 29.

The cause of the derailment of a Denver & Rio Grande fast passenger train at Springville, Utah, on August 2, has been cleared up by the surrender of one Harry G. Hontz, apparently insane. He confesses to the burning of a station at Ulster, Pa., and to the wrecking of signals on the Southern Pacific. A special agent of the Denver & Rio Grande identifies the man as one who had been arrested for wrecking a signal and who was accused of causing a speeder to wreck a mail train.

Mr. McCrea, General Manager of the Long Island Railroad, thinks that the public has actually heeded the railroad's persistent warnings to cross tracks with care. There has been no serious accident at a crossing for sixty days—the days of the heaviest automobile traffic on Long Island during the year. But one person has been injured in these two months, and that only to the extent of a broken arm. But there has been an appalling number of "near-accidents," and he thinks that certain crossings will never be safe unless the gates are kept down and only raised when a vehicle is to cross, or unless wayfarers are required to come to a full stop before passing over the tracks.

In the first six months of 1915 the Pennsylvania Railroad made about 2,000,000 efficiency tests, and 99.9 per cent. of them showed perfect observance of all rules. Over 10,000 tests were made with signals set at stop, and in only 13 cases did the trains fail to stop before passing the signal by so much as a foot. The number of employees killed in the first six months of 1915 was 28½ per cent. less than in the corresponding period of last year—85 this year, 119 last year. This, it is said, was not due to a heavy decrease in train mileage, as passenger train miles were only 6 per cent., and freight train miles 8 per cent. less than in 1914. No passenger has been killed in a train accident on the Pennsylvania since 1912.

Valuation Hearing

The Interstate Commerce Commission will sit in Washington September 30, October 1 and 2, to hear oral argument upon the fundamental principles involved in the work of making valuation of the property of common carriers. It will hear argument on

all questions that may be deemed appropriate to be considered as arising under the valuation act. Representatives of state commissions, as well as the carriers, may participate in the argument, and all parties in interest will be allowed to file briefs.

Railroads in War

The Bureau of Railway Economics has just completed the compilation of a bibliography on the use of railways in war, which should be valuable to anyone interested in determining the magnitude of the influence of railway communication upon modern methods of warfare. The compilation is particularly valuable for the reason that in the case of most countries studies upon this subject are of a more or less ephemeral nature. For this reason the literature is very largely confined to articles in periodical publications, pamphlets, official reports and regulations, etc., which ordinarily are difficult to locate outside of the most comprehensive libraries. Following its usual custom in lists of references of this sort, the bureau gives all available information as to author, language, date and place of publication and reference to the library where the publication may be found.

The list is divided for convenience of reference. A "general" head covers nearly one-half of the references. The remaining part covers the United States Civil war, 1861-1865; Franco-Prussian war, 1870-1871; South African war, 1900-1901; Russo-Japanese war, 1904-1905; European war, 1914-1915; wars in Mexico; wars in the Philippine Islands. To the list of articles having special relation to railway service and arrangements in these several wars are added lists of articles on "Armored Trains" and "Hospital Trains." The references cover upwards of 300 treatises in English, French, German, Spanish and Italian. There are, however, some duplications covering in whole or in part translations into English of articles originally appearing in another language.

A Nineteenth Century Superintendent

[B. A. Porter, in Illinois Central Magazine]

Long years ago, to be exact, in the year of our Lord 1884, Superintendent Frye disembarked from Train No. 6 at Okolona, Miss., a division terminal on the Mobile & Ohio. This was our new superintendent's maiden trip. * * * It required about one minute for the aforesaid Frye to introduce himself to Agent Allen, Chief Clerk Cox, Yardmaster Brown, and the other fifteen or twenty lesser lights who helped to run up an unnecessarily heavy pay roll at this important station.

Superintendent Frye spent three hours on this trip, and if ever a station and yard and roundhouse organization got a trimming Okolona did on this fatal day. I got a promotion. When Frye landed we had a nice "kid" organization. Billie Griffin, messenger boy; Scrap Morris, caller; Skinny Porter, car checker. When Frye left Skinny Porter was assistant chief clerk and had assigned to him the duty of delivering messages, calling crews and checking cars, and to his salary of \$30 there was added \$15, which had formerly been paid to Operator Scales by the government because the negro porter took the maximum and minimum temperature and rainfall; for this increase the new assistant chief clerk was to be on hand at 2:47 a.m. to ticket an early morning train and check baggage.

Mr. Frye also pointed out the fact that there were enough links and pins scattered around the yard to last us nearly a year; that the ink on hand would run the auditor's office for one year, that the stationery would supply Mobile, Meridian and Cairo for one-half year, that we had three warehouse and two cotton trucks more than were needed; that the water tank had been running over for two hours, the pump still running, and the pumper asleep; pointed out many other unnecessary expenses, and wound up his short stay by stopping two truckers and weighing their load of inbound freight with the result that 220 pounds moving on a 72c. rate was added to the revenues.

After Frye left the "kid" organization held a called session. Billie Griffin and Scrap Morris voted "strike"; Skinny Porter, stuck on his new position as assistant chief clerk, voted not to tie the road up, and as a result lost one tooth and had one eye blackened for being a traitor.

Twenty-five years healed this breach and the last time the aforesaid Porter visited his early haunts, Attorney Griffin in a \$5,000 touring car took him for a ride and pointed out his 3,000-acre prairie plantation, and also the handsome residence of Dr. Morris, who was away for the summer in Canada.

The assistant chief clerk, no longer "Skinny," as his belt measure is now 46, plods away and thinks of Frye every day.

Superintendent Frye was correct so far as the necessity for economy was concerned, but in the application of the plan there was no permanent upbuild, such as we have on our line under the present management. Under his system there was no investigation to determine the needs; things were seen to be wrong and instant one or more employees lost out. No one dared to think and suggest; everyone lived in dread as to what would befall him next. The constant desire which is now shown on the part of 90 per cent. of our employees to want to help make everything just a little better, the pride we feel for working for what we believe to be the best railroad in the world, was lacking. No appeal to pride, no co-operation. * * *

The Erie Flood

The flood at Erie, Pa., on the afternoon and evening of August 4 in which, because of the breaking of a dam, about thirty persons in the city were drowned, is said to have caused a longer interruption in railroad service through that city than had been occasioned by a flood before in twenty years or more. The interruption of train service, however, was important more by reason of the magnitude of the traffic—the immense through passenger business of the Lake Shore four-track line and the heavy freight movement over the New York, Chicago & St. Louis—than by the length of time that it took to restore the track—which was only about ten hours. However, this was but a single track, and the restoration of normal passenger service took about eighteen hours, and of the Nickel Plate tracks more than 24 hours. This road had a washout about 300 ft. long, where it was necessary to build a trestle. The Lake Shore had only one serious washout; this was three miles east of Erie, and was about 60 ft. long and 12 ft. deep. Water ran over the tracks for several hours. Traffic was stopped at 8 p. m.; the roadway department was able to begin work about 1 a. m., and trains were put through at 6 a. m. Trains were detained for about 12 hours. The Twentieth Century Limited went through Detroit for the first time. Neither road had any derailments. At French street, Erie, a two-story house, carried off its foundation by the flood, lodged close to the Lake Shore tracks but no serious harm was done to the railway.

MEETINGS AND CONVENTIONS

The following list gives the names of secretaries, dates of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next meeting, October 21-23, 1915, Boston, Mass.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next meeting, August 19-20, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Annual convention, October 4-8, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 19-21, 1915, Detroit, Mich.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual meeting, 2d Tuesday in October, 1915, New York.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual meeting, October, 1915.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Annual meeting, August 17, 1915, Philadelphia, Pa.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next meeting, October 19-21, 1915, St. Louis, Mo.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-16, 1915, Detroit, Mich.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILROAD MEN'S IMPROVEMENT SOCIETY.—J. B. Curran, Erie R. R., 50 Church St., New York. Meetings, alternate Thursdays, October to May. Assembly Rooms of Trunk Line Association, 143 Liberty St., New York.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Next meeting, October 5-7, 1915, Chicago.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Annual meeting, September 14-17, 1915, Salt Lake City, Utah.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Annual meeting, September 14-16, 1915, Chicago.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—Carl Nyquist, C. R. I. & P., 1134 La Salle St. Sta., Chicago. Annual meeting, October 19-21, Colorado Springs, Colo.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.
- TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEWARK.—John J. Kautzmann, P. O. Box 238, Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Hotel Astor, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh.
- TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., East Buffalo, N. Y. Annual meeting, September 7-10, 1915, Chicago.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Building, Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.
- WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Baltimore & Ohio has opened a new freight station in Brooklyn, N. Y., with 200 feet water frontage.

Formal announcement is made of the discontinuance of service by the Pacific Mail Steamship Company on November 2. On that date the company will withdraw its five liners. It is reported that they have been sold to a Chinese syndicate.

During the month of June, 1915, the principal fast freight trains run by the New York Central lines between New York and Chicago arrived on time every day, making a perfect record. The record for the month of July was almost as good, but one delay being recorded, and that only 30 minutes.

The forty-third annual convention of the Traveling Passenger Agents' Association is to be held at Boston on October 4 and 5. Special trains will be run over the Michigan Central from Chicago to Niagara Falls, and the Cleveland, Cincinnati, Chicago & St. Louis from St. Louis and Cincinnati to Niagara Falls, thence over the New York Central and the Boston & Albany to Boston.

George Niedringhaus, of St. Louis, announces that definite plans for a \$3,000,000 by-product coke plant, using Illinois coal, will be made public in the near future. Upon this basis the St. Louis Republic urges the construction of docks and terminals for the utilization of the 8 ft. channel of the Mississippi river, with a view to assuring the future of the city as a steel center.

The Pennsylvania Railroad announces that direct through cars will henceforth be run daily from New York City freight stations to all of the more important cities in the Northwest, in the Missouri river territory and in the Southwest, regardless of the quantity of freight offered. Heretofore small consignments to far Western points have been transferred at various junction points en route.

The Nashville, Chattanooga & St. Louis has a new demonstration and lecture car, and with it the Industrial Department of the road has made a tour through the Sequatchie Valley where, during three days, over 2,500 farmers and their wives and children were entertained with stereopticon views and lectures on farm topics, improved agricultural methods, and better livestock. It is proposed to put on the car a motion picture machine to show motion pictures of farm scenes along the road.

Under the direction of the Industrial Department the car is making a tour of the Shelbyville and Sparta branches this week. In this work the road has the co-operation of the agricultural and dairy experts from the University of Tennessee. To aid in the introduction of pure-bred cattle on the farms along its road, this company has bought a herd of shorthorn cattle from a famous breeder, eighteen cows and heifers and four bulls. These animals are descended from stock imported from England, and are said to be recognized as the best breed for beef and milking purposes.

Passengers traveling in chair coaches on the Missouri Pacific-Iron Mountain may now have a light lunch served to them in their seats without the necessity of going into the dining car. This is a recent innovation and, according to officers of the road, is proving popular. A waiter from the dining car passes through the train during meal hours to take orders. This service is in effect on all trains that have dining cars, buffet or parlor-cafe cars. Freight and passenger service have been resumed on the National Railway of Mexico, between Laredo, Tex., and Monterey, Mex., after a suspension of 15 months.

The Southern Pacific now takes canned goods, beans, asphalt and barley from San Francisco and other California ports to New York at 40 cents per 100 lb.; this by rail to Galveston and thence by steamship. The rate applies only to shipments of at least 40 tons. The road has applied to the Interstate Commerce Commission for authority to make the same rate on oats, wheat and rice, with the same minimum. Between the same points the company takes dried fruit in boxes, minimum 30 tons, at 60 cents, and in sacks at 80 cents; and has asked for authority

to make lower rates on wine and alfalfa meal; wine 45 cents and alfalfa meal 50 cents; minimum, in both cases, 30 tons.

The principal railways of Canada, at the suggestion of the Railway Commission, have made a specially low rate—50 cents a ton for any distance up to 50 miles—for gravel in carloads for cities and towns, to be used in roadmaking. The request for a low rate came originally from Western Ontario, J. B. Armstrong, a member of Parliament, making the request of the Railway Commission that a low rate be ordered by the government. Chief Commissioner Drayton reminded the applicants that the commission could not justly require a railway to establish unremunerative rates, or any rate unfairly out of line with a basis high enough to maintain a satisfactory railway service.

Judge Elliott in the Maryland Court, at Baltimore, August 7, denied the application of the Baltimore & Ohio for an injunction restraining the Public Service Commission of the State from enforcing its order requiring the road to continue in use certain season tickets, which are declared by the road to be unprofitable. Of a number of commutation rate questions presented before the Commission recently several were decided in favor of the road and others against it. Judge Elliott held that the public should have the benefit of the lower rates until the Public Service Commission could present further facts and arguments, the question to be left open until the court should be in a position to issue or refuse to issue a permanent injunction.

Ohio coal operators are carrying on before the state commission a contest for the reduction of freight rates. A few weeks ago the Supreme Court approved reductions made four years ago by the state commission, following which approval the Hocking Valley, the principal respondent, filed new tariffs covering the reductions. The operators' complaint having been made before the reduced tariffs were filed, they are now in the position of having difficulty in holding the principal defendant in the case. The commission has held that for the time being, at least, the case against the Hocking Valley shall not be dismissed. In ruling out certain evidence which the railways desired to introduce to show that mining conditions and prices of production as between Ohio and outside coal fields, and not exorbitant freight rates, are responsible for present inactivity in Ohio mining centers, the commission declared the only question before it to be: "Are freight rates on coal within the state unreasonable and discriminatory?"

The State Public Utilities Commission of Illinois announces a hearing in Chicago on August 23 at 10 a. m., on the petition of various express companies for authority to advance certain rates. The scale of express rates applicable in Illinois adopted by the commission on February 1, 1914, proved to be an advance in some instances and a reduction in others. The express companies have proposed an advance, to become effective on September 1, and the commission has scheduled this hearing in order to determine what amounts of advance shall be allowed.

Effect of Proposed Advances in Texas Rates

With reference to state and interstate freight rates in Texas and the effect of the proposed increase in intrastate rates, for which an application is now pending before the State Commission, J. S. Hershey, general freight agent of the Gulf, Colorado & Santa Fe, has given out a statement explaining the views of the carriers. It has been suggested during the hearings before the commission that the increase would tend to divert the movement of traffic from interstate points of origin and that Texas railways would have their revenues curtailed rather than increased by obtaining greater revenues on intrastate than on interstate traffic.

Mr. Hershey says: "I should say, from a Santa Fe standpoint, that the proposed increase, which will affect the earnings of that line greatest, would be upon grain, grain products and hay, cotton, cotton seed products, fruits and vegetables, live stock, stone, sand and gravel. These commodities are all Texas products, and to the extent of their consumption within the State of Texas they surely have no outside or interstate interference, so that whatever increase might be made in the rates by the Texas commission for the movement of these commodities they would not be interfered with in any manner by outside sources. I think this same view of the proposition is manifestly apropos of practically all Texas products to the

same extent that they are consumed in Texas, outside competition within this state being nil. This explanation is made in order to correct any impression which may prevail that the rate adjustment as proposed by the carriers will operate to the disadvantage of Texas shippers and to the advantage of interstate shippers. Certainly no such purpose was in the mind of the carriers when these advanced rates were proposed, and assurances have been given to the commission that there was no desire on the part of the carriers to divert any traffic from its present channels, but the desire was merely to obtain a proper remuneration for the service the carriers were performing."

Twenty Millions in Gold

On Tuesday night last the American Express Company brought into New York City from Halifax, N. S., seven carloads of gold; \$19,534,200, in 700 boxes, which had been shipped by the British government to J. P. Morgan & Co., its New York bankers. The gold is said to have been brought from England to Halifax by a vessel of the British Navy, and the transportation throughout from London to New York was carried out with the greatest possible secrecy. The train came via Bangor, Me., Boston, Mass., and Chatham, N. Y., and was preceded by a pilot engine. It is said that in the same cars, or one of them, were securities valued at \$35,000,000; securities owned in England to be deposited in New York as collateral for loans. This is believed to be the largest shipment of gold ever trusted to a single vessel. There was a little delay at Halifax, to make the necessary arrangements with the express company; and, counting interest on the gold at 5 per cent. per annum, the delay incurred a trifle of, say, \$2,500 additional expense.

Car Surpluses and Shortages

The committee on relations between railroads of the American Railway Association, in presenting statistical statement No. 7 giving a summary of freight car surpluses and shortages for August 1, 1915, says:

The total surplus on August 1, 1915, was 265,131 cars; on July 1, 1915, 276,421 cars, and on August 1, 1914, 198,998 cars.

The surplus for August 1, 1915, shown above, includes figures reported since the issue of statistical statement No. 6, reported in the *Railway Age Gazette* of July 16, page 136.

The decreases in surplus under July 1, 1915, are chiefly in Groups 2 and 4 (East) in coal and gondola cars. There are also decreases in the surplus of box cars in Group 5 (Southeast) and Group 8 (Central), which are offset by an increase in the surplus of box cars in Group 6 (Central North).

The total shortage on August 1, 1915, was 888 cars; on July 1, 1915, 785 cars, and on August 1, 1914, 2,333 cars.

The figures by classes of cars follow:

Classes	Surplus	Shortage
Box	132,342	352
Flat	12,666	99
Coal and Gondola.....	74,488	414
Other	45,635	23
	265,131	888

BRITISH LOCOMOTIVE EXPORTS.—The exports of locomotives from the United Kingdom are showing a sharp falling off, although when the comparison is extended to 1913 the outlook is less serious. The value of the engines exported in June was \$1,091,000, as compared with \$1,480,000 in June, 1914, and \$1,180,000 in June, 1913. In the six months ended June 30, 1915, locomotives were exported to the value of \$5,890,000, as compared with \$10,000,000 in the first half of 1914, and \$6,013,000 in the first half of 1913.—*Engineering*, London.

A NEW INDIAN RAILWAY.—The Teesta Valley Light Railway in Bengal is constructed, like the Darjeeling-Himalaya line, upon a 2-ft. gage, and the locomotives are of a special hill-climbing type. Although the new line is temporarily intended for goods traffic only, a journey from Siliquri to Teesta is so picturesque that there is little doubt that it will ultimately attract many tourists. At present the line stops short at Reang, but in a few months it will be carried another five miles to Teesta, thus bringing a traveler within easy reach of Kalimpong. The Teesta river forms the boundary between Sikkim state and the Darjeeling district. Near Sivok, the first station past Siliquri, the Teesta is 750 ft. wide, and at this point a suspension bridge is to be erected for the purpose of opening up Duars traffic. Several fine bridges occur upon the Teesta Valley line, notably at Sivok, Kalijore and Reang. Some of the spans on these bridges are 100 ft.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The South Bend, Ind., chamber of commerce has filed a complaint with the Interstate Commerce Commission against the withdrawal of proportional class rates applying to Northern Indiana cities to the Ohio river on traffic destined for the southeast.

The Southern Pacific Atlantic steamship lines have filed an application with the Interstate Commerce Commission for permission to quote low commodity rates from New York pier to California points without making corresponding reductions to intermediate points. A hearing before Examiner Thurtell has been set for September 1, in New York City.

Application Under the Panama Canal Act

In re Southern Pacific's ownership of stock in Sacramento Transportation Company. Opinion by Commissioner Clark:

The commission grants the application of the Southern Pacific and the Central Pacific to retain their control of the Sacramento Transportation Company, which owns and operates a line of steamboats on the Sacramento river and connecting waters. It is held that Southern Pacific competes for traffic with the transportation company, but that the operation of the boat line is in the interest of the public. (34 I. C. C., 648.)

Rates on Cottonseed Oil from Points in Oklahoma

Oklahoma Cottonseed Crushers Association v. Missouri, Kansas & Texas et al. Opinion by Commissioner Meyer:

The commission finds that the present grouping of points in Oklahoma, producing cottonseed oil, cake, meal and hulls, is unjust and unreasonable, and that the present blanket rates are unreasonable and prejudicial. The commission is unable to formulate conclusions regarding the details of a readjustment, but it is believed that the establishment of a distance tariff applicable from all points in the present blanket may be a solution of the difficulties. It therefore suggests a tentative schedule, worked out on the mileage basis. A further hearing in the case will be held at Kansas City, Mo., on October 11, 1915. (35 I. C. C., 94.)

Grain Milled in Transit at Lawrenceburg, Ind.

Opinion by Commissioner McChord:

The commission in this case rules against the reasonableness of a Baltimore & Ohio tariff, the effect of which would be to increase the rates from East St. Louis through Louisville or Cincinnati to points in Southeastern and Carolina territories on grain milled in transit at points on its line between East St. Louis and Cincinnati. It was found that the proposed tariff would effect an unjust discrimination against the protestant, a milling company of Lawrenceburg, Ind., in favor of competitors at St. Louis, Louisville, Cincinnati, and also at points south of the Kentucky-Tennessee State line on the lines of the Baltimore & Ohio's connections. (35 I. C. C., 27.)

The Ogden Gateway Case

Opinion by Commissioner Harlan:

The commission in this case finds that the Union Pacific has justified a proposed cancellation of the joint through passenger fares now in effect in connection with the Denver & Rio Grande between points in the territory of the Oregon Short Line and points east of and including Colorado common point territory. The purpose of that course is to give to the Union Pacific and the Oregon Short Line, two of the lines forming a part of the Union Pacific system, a longer haul than they now enjoy on passenger traffic to and from the local territory served by the Oregon Short Line. The commission makes certain suggestions, however, relative to the continuance of through accommodations for the benefit of travelers desiring to pass over the routes at the lawful fares available. (35 I. C. C. 131.)

Demurrage Charges

Picher Lead Company v. St. Louis & San Francisco. Opinion by Commissioner Clements:

Upon a complaint alleging that the accrual of 615 days' debits in excess of credits, under an average demurrage agreement, during a certain period resulted from defendant's failure to construct a 60-ft. extension to complainant's unloading track, the commission finds that the demurrage charges were properly assessed. It happened that the so-called contract for the track extension was of an informal character, and appears to have been only a promise to comply with complainant's request therefor. But even had it been a formal written contract, the question of alleged damages resulting from its non-fulfillment would be one for determination by the courts, and not by the commission. Complaint dismissed. (35 I. C. C., 45.)

The Checking of Baggage on Combination Tickets

Opinion by the Commission

The commission finds that the Pennsylvania and the Baltimore & Ohio have not justified proposed rules prohibiting the through checking of baggage and rate of through parlor and sleeping car tickets on combination tickets. For a number of years travelers from New York, Philadelphia, Baltimore and other trunk line territory points to points in the South and Southeast have been able to check their baggage through to destination and to secure through Pullman car accommodations on combinations of tickets good only to and from the gateways to Southern and Southeastern territory. The Pennsylvania and the Baltimore & Ohio have proposed to abolish the practice. The rules assailed apply to combinations of all forms of tickets issued by respondents and by their Southern connections to and from the gateways involved, but most of the testimony relates to combinations involving the use of Southern carriers' mileage books or southeastern passenger association interchangeable mileage exchange orders, which result in lower fares than the published joint through fares. The respondents state that the rules assailed were intended primarily to protect their joint fares and to conserve their revenues. The Pennsylvania issues 1,000-mile mileage books which it sells at a rate of 2¼ cents per mile. Southeastern passenger association interchangeable mileage exchange orders sell at a rate of 2 cents per mile. On this basis the combination fare from New York to Atlanta, for example, is \$13.88, or \$3.42 less than the joint through fare of \$17.30. From New York the joint through fares exceed the combination mileage fares by \$1.74 to Richmond, Va.; \$3.03 to Asheville, N. C.; \$4.30 to Savannah, Ga.; \$5.26 to Jacksonville, Fla.; \$6.06 to New Orleans, La. The protestants, on the other hand, emphasize the inconvenience that will result to travelers if they must detrain at Washington, for example, to recheck their baggage and to secure Pullman car accommodations for the portions of their journeys beyond Washington. Under the proposed rule, a traveler presenting two straight fare tickets for transportation from a point on respondent's line to a southern or southeastern destination on a connecting foreign line, for which he had paid a sum in excess of the joint through fare, would be denied through baggage checking and Pullman accommodations. Such a provision is obviously unjust and unreasonable. It operates to subject the holders of all such tickets to an annoying and often prohibitory inconvenience, and goes beyond the avowed purpose of respondents to protect the joint through fares in which they participate. No carrier receiving the equivalent of its full local fare to the junction may, in respect of combinations of tickets severally subject to the act, whatever the character of the transportation issued and accepted by the connecting line, lawfully withhold provision for incidental services so constantly and universally in demand as those at which the proposed rules are directed. (While Washington, as an important gateway, has been taken as illustrative of the situation involved, the local tariffs carrying rates to Washington and other junctions of the Pennsylvania Railroad with connecting lines from points on the Pennsylvania Railroad were not suspended, and the right of checking baggage and securing Pullman accommodations from points on that line through those gateways has therefore been withdrawn. In accordance, however, with the views above expressed, the arrangements should without delay be restored at all junctions with other lines. Upon all the facts disclosed we find that respondents have not justified the proposed rules, and an order requiring the cancellation of the suspended schedules

will be entered.) Commissioner Harlan dissents. (35 I. C. C., 157.)

STATE COMMISSIONS

The Nebraska State Railway Commission has received two conflicting opinions relative to the validity of the public warehouse law passed at the last session of the Legislature. The attorney-general has given an opinion that the act is invalid and cannot be enforced. The dean of the State University Law School says the law is valid. The commission is inclined to take the latter opinion. The commission had been advised by the attorney-general previously that it had no authority to take other legal advice than his own; but the Supreme Court of the state has held that in extraordinary cases a state officer is not required to accept the services of the state's attorney.

The New York State Public Service Commission, Second district, has taken the first steps toward the enforcement of the so-called jitney bus law passed at the last session of the Legislature by applying to the supreme court for a permanent injunction restraining James E. Adams in Corning, and Elmer G. Booth in Rochester, from operating "jitney" lines without the consent of the local authorities or a certificate of public convenience and necessity from the commission. This statute requires any vehicle operating in competition with a common carrier to procure the consent of the local authorities, and to obtain a certificate of public convenience and necessity from the Public Service Commission before operating in the streets of any of the cities of the state. The statute in specific terms makes all persons and corporations engaging in the jitney business, as defined, common carriers and subject to all provisions of law as such.

The New York State Public Service Commission, Second District, has issued an order forbidding the railroads to collect a charge for "spotting" cars, or placing them on and collecting them from industrial tracks and roads. This charge was proposed to be imposed on both interstate and intrastate traffic. The Public Service Commission suspended it in the case of intrastate traffic pending the decision of the Federal Commission. The Interstate Commerce Commission has issued its order deciding against the reasonableness of the charge in the large field, and the Public Service Commission follows this decision. The carriers—all of the roads of importance in the State—have now filed triffs discontinuing the proposed charge. The charge was to have been made at 5½ cents a ton, with a minimum of \$2 a car.

PERSONNEL OF COMMISSIONS

The railroad commissioners of South Dakota have appointed Joseph E. Love engineer for the commission. Mr. Love was formerly in the engineering department of the Chicago, Milwaukee & St. Paul.

COURT NEWS

The two-cent passenger fare case of the State of Oklahoma, which is being heard at Oklahoma City, has been continued by the Federal Court until September 6, because of the state being unable to take up its cross-examination at the present time.

The United States District Court at Detroit on August 5, denied the petition of the Pere Marquette to increase its passenger rates. The petition for an injunction to restrain the state authorities from enforcing the two-cent rate was filed by the holders of the consolidated mortgage bonds of the road. The circuit court of appeals at Grand Rapids had previously held that the showing made by the complainants did not justify an increase, but withheld final decision to permit the filing of a supplemental bill, which is now disposed of adversely to the railway company.

Injuries to Mail Clerk—Proximate Cause

A mail car was equipped, in accordance with the postal regulations, with an iron bar across each door, for the protection of the clerk. Before the car left the terminal, and while the clerk was working in it, a man came in to clean the car and told the clerk that he was going to take out the bar. The clerk acquiesced in this, but told the man to be sure to put it back.

The bar was not put back, and, in its absence, the clerk fell from the car and was injured. In an action against the railway company, the Virginia Supreme Court holds that the road was not liable, as its employee was not acting within the line of his duty in removing the bar, and he could not bind the company by his promise to restore it. If the clerk relied on this promise, he did so at his own peril. The fact that the car was insufficiently lighted was immaterial, for that was not the proximate cause of the accident.—*Washington & O. D. (Va.)* 85 S. E. 482.

Notice of Injuries to Live Stock—Amount of Claim

A shipper gave notice of injuries to live stock, but the claim filed with the notice was not so large as the amount afterwards sued for. The Texas Court of Civil Appeals held that this did not defeat recovery; but the amount of the claim was a proper matter for the jury to consider in estimating the damages sustained.—*Pecos & N. T. v. Holmes (Tex.)*, 177 S. W. 505.

Injuries to Live Stock—Notice

Construing the provision of the interstate commerce law requiring written notice of injuries to live stock, the Texas Court of Civil Appeals holds that the object of the provision is to afford an opportunity to the railroad to investigate the merits of the claim; and where it admits the justness of the shipper's claim his failure to give notice is not prejudicial to the carrier's rights, and notice becomes unnecessary.—*Hovey v. Tankersley (Tex.)*, 177 S. W. 153.

No Duty to Inspect Simple Appliances

In an action by a station agent for injuries caused by a fall, the result of a bolt which held the tongue of a four-wheel baggage truck in place, working loose, it appeared that the agent had 11 years' experience in the work of handling trucks, and knew of the dilapidated condition of that in question. The Virginia Supreme Court holds that such a truck is a simple appliance, the duty to inspect which rested on the agent rather than the railroad, which was not liable.—*Southern Ry. v. Snow (Va.)* 85 S. E. 488.

Boiler Explosion—Evidence of Cause

In an action by a locomotive engineer for injuries caused by the crown sheet "letting down," causing an explosion, it was alleged that the crown sheet and its fastenings were weak and insecure. The plaintiff's evidence tended to show that sufficient water was kept in the boiler to cover the crown sheet until at least a few minutes prior to the accident. The theory of the defense, with which this evidence was not inconsistent, was that in running down hill, after ascending an upgrade for about eight miles, the water ran forward in the boiler, and because of insufficient water therein the crown sheet was left uncovered, causing it to be burned out. Expert evidence was adduced to show that this was the cause of the explosion. The only evidence of defect in the crown sheet was that of one of the company's boiler makers, who testified that, on examining the engine the day before the accident, he found five broken stay bolts (of which there were more than 400 in the crown sheet) and about six bolts pulling through the sheet. The St. Louis Court of Appeals held that the evidence did not justify a finding that the crown sheet, as distinguished from the stay bolts, was defective. An employe, suing for a personal injury, has the burden of proving negligence of the employer, and a casual connection between the negligence and the injury; and where the injury might have resulted from one of two causes, for only one of which the employer was liable, the employe must show with reasonable certainty that the cause for which the employer was liable produced the injury. Under this rule the plaintiff could not recover.—*Sparkman v. Wabash (Mo.)*, 177 S. W. 703.

Discrimination in Diverting and Expediting Shipments

The interstate commerce commission has declared that the privilege of diverting cars is of value to the shipper, and in order to avoid discrimination it is necessary for the carrier granting this privilege to publish that fact in its tariff, together with the conditions on which it may be used. The Norfolk Southern adopted a tariff and conditions on which diversions would be made, which provided that parties making request for change of

destination must furnish satisfactory proof of ownership and acceptable form of bond. In an action by the shipper of a consignment which was delivered without change of cars to the consignee in Boston, Mass., the complaint was that while in transit the railroad agreed to divert the shipment to another consignee in New York and failed to do so. It appeared that this agreement to divert was made over the telephone. The Virginia Supreme Court holds that the regulations were not imposed solely for the benefit of the carrier, so as to be capable of being waived at its pleasure. They were intended to place all shippers upon the same plane and prevent unfair preferences among them, and the carrier could not waive them and allow diversion in an unauthorized manner. It followed the analogous case of *C. & O. v. Ruckman*, 115 Va. 493, 80 S. E. 496, where it was held that "a special contract with a particular shipper, whereby a carrier agrees for the published rate to expedite an interstate shipment of freight and deliver the same on a designated day, gives to the particular shipper an advantage over other shippers, and makes a discrimination in his favor which is prohibited by the interstate commerce act; hence such a contract is void."—*Norfolk Southern v. Whitehurst (Va.)* 85 S. E. 458.

Liability for Injury to Passenger on Steps of Vestibuled Car

A passenger, while standing on the steps of a vestibuled car in a moving train, to which position he had been invited by the action of a baggage man in opening the vestibule doors under instructions from the conductor to let the passenger off at the next station, was knocked from the steps by the swinging shut of the vestibule door, which the baggageman had negligently left unsecured. A rule of the company posted in the car prohibited passengers from going upon the platform when the car was moving, and a New Jersey statute exempted the company from liability for injury to a passenger "by reason of" such rule. In an action for his injuries, the Circuit Court of Appeals, Third Circuit, held that, while the passenger may have assumed the ordinary risk in violating the rule, he was not bound to anticipate the negligence of the baggageman, which was the proximate cause of his injury, and was not barred of the right to recover by contributory negligence.—*Central of New Jersey vs. Hirsch, C. C. A.*, 223 Fed. 44.

No Power to Construct Private Tramroad Over Right of Way

The predecessor of the Seaboard Air Line bought a tract of 40 acres from the state, built a railroad across it and then conveyed the 40 acres to third persons without reservation of any right of way. The owners of the land subsequently claimed that the railroad company was merely a tenant by sufferance, or, at least, that they could use the right of way for any purpose consistent with the railroad's use of it. They proposed to build a private tramroad to haul logs across the track, which the railroad sought to enjoin. The Florida Supreme Court holds that the railroad had no authority to sell its right of way; it must be held by implication to be excepted from the conveyance of the 40 acres.

The law recognizes the right of the public to have public roads cross railroad tracks, but makes no provision for a private tramroad. Common-carrier railroads as "public utilities . . . must be safeguarded for the safety of persons and property in transit." *Seaboard Air Line vs. McRainey (Fla.)* 68, S. E. 753.

Limitation of Powers of Railroad Companies

The Georgia Court of Appeals holds that it was beyond the powers of the president of a railroad incorporated under the general laws of Georgia as a common carrier, either with or without the consent of the board of directors, to give funds belonging to the corporation for the erection of a public school, or for the purpose of building up or promoting the town in which the school is situated, even though the school or town be located on the line of the company's road and its transportation business thereby be increased. A vote executed for such a purpose could not bind the corporation where the payee had full notice of the unauthorized purpose for which the note was given. The court cited *Military Interstate Assoc. v. Savannah T. & I. of H.*, 105 Ga. 420, 31, S. E. 200, where the Supreme Court treated as ultra vires and void a subscription by a railroad to the capital stock of a corporation organized to furnish amusement to the public at a point on the line, and which therefore might inci-

dentially increase the road's transportation business.—Brimson, etc. (Ga.) 85 S. E. 634.

Validity of West Virginia Two-Cent Fare Law

The Public Service Commission of West Virginia sought by mandamus to compel the Baltimore & Ohio to obey its order requiring the railroad to conform to the provisions of Chapter 41, Acts of the Legislature of 1907, limiting railroads in their charges for the transportation of passengers and their baggage to two cents a mile. The railroad did not deny that the law was in force, and was not repealed by the public utilities act, but it claimed that it was confiscatory. It was held by the West Virginia Supreme Court that the act remained the paramount law on the subject, binding upon the railroad, until in the first instance, upon application by the railroad, or by some one injuriously affected by the act, or upon the initiative of the Public Service Commission, the rate had been investigated by the Commission and judicially determined to be unreasonable or confiscatory as to the Baltimore & Ohio, and therefore invalid. Until then or until the act had been otherwise amended or lawfully nullified, the Public Service Commission, as prescribed by the act creating it, had jurisdiction to compel observance of the act by the railroad. Until the Commission had investigated and determined that the rate complained of was unreasonable and invalid as to the Baltimore & Ohio, the courts could not interfere.—State vs. B. & O. (W. Va.) 85, S. E. 714.

Strict Construction of Air-Brake Law

The United States District Court for the Northern District of Ohio, Eastern Division, in the case of the United States vs. Pennsylvania Company, in a decision handed down July 2, penalizes the railroad on 34 counts for hauling 33 freight cars, all in bad order, without using air brakes. The decision by Judge Clarke, says:

"Where a carrier operates a train without the required percentage of air brakes being in use, due to the fact that the empty bad order and chained up cars composing such train are in condition such that the operation of the air brakes is not reasonably possible, and fails to establish that it was not reasonably possible to have placed these cars in such condition of repair, temporary or permanent, that the air brakes could have been connected up and used, such a movement is in violation of the air-brake provision of the safety appliance acts and does not come within the proviso to the act of April 14, 1910.

"The proviso exempts from the penalties of the acts only a movement of equipment which becomes defective when in use on a line of railway, and then only from the place where first discovered to be defective to the nearest available place where repairs can be made, and where such movement is necessary in order to make such repairs and they can not be made except at such repair point.

"The failure on the part of the carrier to have repair yards of adequate capacity or to provide a sufficient force of men to repair cars which may become defective in the vicinity of its established yards can not be permitted to create the necessity which the proviso declares shall relieve a railroad from liability for the movement of defective cars."

This is a civil action. The petition contains 34 counts. The first 25 counts are based upon the hauling of that number of empty bad order cars in a train from Mosier, Ohio, to Dock Junction at Erie, Pa., in July, 1913, when one or both ends of each of said cars (with the exception of the car mentioned in the 25th count, which was hauled by its own drawbars) were not equipped with automatic couplers as required by statute, but were fastened to adjoining cars by means of chains.

At Haselton, eight additional empty bad order cars were put into this train and hauled by means of chains instead of drawbars. The twenty-sixth count is based upon the operation of this train (33 cars), together with engine, tender and caboose, when less than 85 per cent. of the cars were controlled by air brakes, the air brakes being operated on engine and tender only.

The case was submitted to the court upon an agreed statement of facts, a jury being waived.

The cars, all empty, were thus moved because the repair facilities at Mosier and Haselton were congested, while those at Dock Junction were available. The air-brake hose was not coupled because of the liability of trouble from uncontrollable

slack and separation of hose couplings. The whole trip, about 97 miles, was made at about 10 miles an hour.

The court finds that the repairs could have been made at Haselton and Mosier but for the congestion; and virtually decides that repair facilities must, without exception, be adequate, everywhere.

"Such wise and humane legislation as the safety appliance acts" must not be weakened by allowing a railway to decide when its provisions may be suspended; must not be so construed as to put it in the power of carriers to largely suspend it "in a most important respect."

Reasonableness of Tender of Large Bill for Small Fare

In an action for wrongful ejectment for refusal to pay a fare of four cents a mile, the question involved was whether a \$100 bill was a reasonable tender at a union station ticket office at Gulfport, Miss., in payment of \$2.01. It appeared that the plaintiff boarded the train at Pascagoula, Miss., and went to Gulfport, where he proposed to take the regular fast train to New Orleans two hours later. At Gulfport he found he was without small change. The ticket agent only opened his window when the train was in sight. When the plaintiff tendered a \$100 bill he said he could not change it, and to pay his fare on the train. The plaintiff boarded the train, tendered the \$100 bill to the conductor, and said if he had no change they could wait and get the bill changed at the ticket window at New Orleans. The conductor said he did not know whether the plaintiff tried to buy a ticket or not, and demanded four cents a mile instead of the regular fare of three cents. This the plaintiff said he would not pay and was ejected. The trial court instructed the jury to find for the defendant, which it did.

On appeal, the Mississippi Supreme Court held that the trial court was in error in holding, as a matter of law, that the \$100 bill was an unreasonable sum to tender in a cosmopolitan city like Gulfport, especially in view of the fact that the agent was in a union depot handling funds of two large railroads. "The railroad companies," the court said, "are, of course, in the business of providing transportation for hire, and owe, we think, a duty to the traveling public to provide reasonable facilities for making change at an important station like the one here involved. They are servants and not masters. The lack of adjudicated cases on this point indicates, in the language of Patterson, J., in *Barrett v. Market St. Ry. Co.*, 81 Cal. 296 (where it was said a distinction should be made between passengers on street railways and steam railroads), 'that a question like this will, as is usual, settle itself by a spirit of mutual accommodation between carrier and passenger.' * * * We do not undertake to lay down any rule defining what is and what is not reasonable tender in all cases. This is a mixed question of fact and law to be determined in each case, taking into account always the size of the city, town or village where the passage is demanded, the volume of business done, and the facilities for making change. We do say, however, that in this particular case the court could not, as a matter of law, declare the \$100 an unreasonable amount in a city like Gulfport. There is no question of the good faith of appellant, and surely we have fallen on uncertain times if a white gentleman with a pocket full of \$100 bills cannot buy first-class passage on a train operated by a common carrier doing both an interstate and intrastate business without paying a premium to do so, especially when he has transacted all business on hand and is destined for the attractive and cosmopolitan city of New Orleans. Such conduct on the part of the railway company comes near violating the constitutional guaranty accorded every citizen of the 'pursuit of happiness.' Reversed and remanded."

Mr. Chief Justice Smith dissented, saying, in part: "I think that it can be said, as a matter of law, that a \$100 bill does not reasonably approximate a fare of \$2.01. To require a railroad company to keep its ticket agent supplied with sufficient money to change all bills of this amount that may be tendered them in payment of small fares will not only seriously handicap it in its business by keeping an unnecessarily large amount of its money thus tied up, but will make its ticket offices the most attractive of places for burglars and robbers; and, moreover, its agents cannot transact their business with that expedition to which the traveling public is entitled, if all or a great part of the intending passengers put them to the trouble of changing bills for large amounts tendered in payment of small fares."—*Jones v. L. & N. (Miss.)*, 68 So., 924.

Railway Officers

Executive, Financial, Legal and Accounting

Lee H. Landis, assistant to the president and traffic manager of the Tidewater Southern, has had his headquarters transferred from Stockton, Cal., to San Francisco.

Operating

C. J. Connett has been appointed assistant trainmaster of the Creston Division of the Chicago, Burlington & Quincy, with headquarters at Creston, Iowa.

James Harry Johnson, trainmaster of the Yellowstone division of the Northern Pacific at Dickinson, N. D., has been transferred to the Fargo division, with headquarters at Dilworth, Minn., succeeding J. M. Boyd, who has been transferred to the Yellowstone division, succeeding Mr. Johnson.

Louis Charlton Fritch, assistant to the president of the Canadian Northern at Toronto, Ont., has also been appointed general manager of the lines east of Port Arthur, with headquarters at Toronto.

Mr. Fritch was born in 1868, at Springfield, Ill., and took a course in civil engineering at the University of Cincinnati. Subsequently, he took a course in law and was admitted to the bar in Ohio. He began railway work in 1884, as supervisor's assistant on the Ohio & Mississippi. From January, 1886, to October, 1892, he was assistant engineer, and then to November, 1893, was engineer of maintenance of way of the same road, succeeding to the position formerly filled by the chief engineer and master maintenance of way. He was also chief engineer



L. C. Fritch

in charge of construction of the Cincinnati & Bedford. On November 1, 1893, he was appointed division engineer of the Baltimore & Ohio Southwestern, which absorbed the Ohio & Mississippi. From September 1, 1899, to November, 1902, he was superintendent of the Mississippi division of the same road. In February, 1904, he went to the Illinois Central at Chicago, and was engaged in special work until March 1, 1905, when he became assistant to the general manager of the same road. He was appointed assistant to the president in November, 1906, and from March 1 to November 15, 1909, was consulting engineer of the same road. He was later appointed chief engineer of the Chicago Great Western, and in March, 1914, was appointed assistant to the president of the Canadian Northern, which position he still holds.

Traffic

W. H. Mason has been appointed commercial freight agent of the Baltimore & Ohio, with headquarters at Uniontown, Pa., vice W. H. Eaton, promoted.

Edward J. Naylor, assistant freight and passenger agent of the Chicago & Alton at Peoria, Ill., has resigned to become general traffic manager of the Kansas City, Mexico & Orient of Texas, with headquarters at San Angelo, Tex.

J. D. Kenworthy, assistant general freight agent of the Denver & Rio Grande at Salt Lake City, Utah, has also been appointed assistant general passenger agent, succeeding I. A. Benton, resigned. His official title is assistant general freight and passenger agent.

F. S. McGinnis, district passenger agent of the Southern

Pacific at Los Angeles, Cal., has been appointed general passenger agent, with headquarters at Los Angeles, succeeding James Horsburgh, Jr., resigned. C. J. Balfour, commercial agent at Pasadena, Cal., succeeds Mr. McGinnis.

William T. LaMoure, whose appointment as general freight agent of the Boston & Maine, with headquarters at Boston, Mass., has already been announced in these columns, was born at Worcester, N. Y., and was



W. T. LaMoure

educated in the public school of his native town. He began railway work in 1882, as a telegraph operator on the Boston, Hoosac Tunnel & Western, now a part of the Boston & Maine. In 1885, he was appointed station agent at Petersburg Junction, N. Y. One year later he was transferred to Valley Falls, and then became agent at Johnsonville, when the Boston, Hoosac Tunnel & Western was consolidated with the Fitchburg Railroad. In 1892, he was appointed freight agent of the Fitchburg Railroad at Troy, N. Y.; three years later he was

transferred to Boston, as chief clerk of the local freight office, and two years later became local freight agent in charge of the Boston freight terminals of the Fitchburg Railroad, and continued in that position after the Fitchburg was leased to the Boston & Maine. In 1907, he was appointed foreign freight agent, and in January, 1914, was appointed assistant general freight agent of the Boston & Maine, which position he held at the time of his recent appointment as general freight agent of the same road above noted.

Engineering and Rolling Stock

A. M. Harvey has been appointed signal supervisor of the Canadian Government Railways, with headquarters at Montreal, N. B.

Charles Edelman has been appointed signal supervisor of the Missouri Pacific, at Osawatimie, Kans., succeeding A. Dewey, transferred.

C. C. Jones has been appointed supervisor of bridges and buildings of the Detroit division of the Grand Trunk, with headquarters at Detroit, Mich., succeeding H. G. Batten.

Harry C. Ruppel has been temporarily appointed roadmaster of the Northern Pacific, with headquarters at Pasco, Wash., succeeding Dan McLaughlin, granted leave of absence.

F. C. Carlson, assistant master mechanic of the Texas & Pacific, has resigned to become master mechanic of the International & Great Northern, with headquarters at San Antonio, Tex.

Purchasing

H. M. Powell, recently general storekeeper of the St. Louis & San Francisco, has been appointed to the newly created position of supervisor of material and supplies of the Texas & Pacific, with headquarters at Marshall, Tex.

OBITUARY

M. D. Monserrate, second vice-president of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex., died at San Diego, Cal., on July 30, at the age of 78 years.

M. J. Healy, until recently general manager of the Estacado, Gulf & Western at Midland, Tex., died on July 27, at Muscatine, Iowa. For the past 20 years Mr. Healy had been promoting railroads in Texas and other states, and at the time of his death was promoting the Chicago, Western Illinois & Iowa, from Arpee, Ill., to Chillicothe.

Equipment and Supplies

LOCOMOTIVE BUILDING

THE FRENCH GOVERNMENT.—See item under Car Building.

THE PINE BELT LUMBER COMPANY, Fort Towson, Okla., has ordered one Mikado type locomotive from the Baldwin Locomotive Works.

THE UNITED STATES PORTLAND CEMENT COMPANY, Concrete, Colo., has ordered one 4-wheel switching locomotive from the Baldwin Locomotive Works.

THE PENNSYLVANIA has authorized its Altoona shops to proceed with the construction of 26 freight and 68 switching locomotives. This will complete the 1915 replacement program, which, as was noticed in the *Railway Age Gazette* of April 23, included a total of 194 locomotives for the Lines East and West of Pittsburgh.

CAR BUILDING

THE MAINE CENTRAL is in the market for 1,100 center constructions.

THE BANGOR & AROOSTOOK is in the market for 100 40-ton flat cars.

THE GUANTANAMO & WESTERN, with offices at 82 Beaver street, New York and Guantanamo, Cuba, has ordered 10 cars from the Magor Car Company.

THE HAVANA CENTRAL, which was reported in the *Railway Age Gazette* of July 9 as having ordered 660 freight cars from the Standard Steel Car Company, has now increased that order to 1,100 cars.

THE WHEELING & LAKE ERIE has filed an application in the Federal court at Cleveland, Ohio, to issue \$2,000,000 worth of receiver's certificates. Receiver Duncan wants to purchase 1,700 modern freight cars with the money.

THE BALTIMORE & OHIO has divided an order for 1,000 100,000-lb. capacity steel hopper car bodies among the Standard Steel Car Company, the Pressed Steel Car Company and the American Car & Foundry Company. These car bodies will be placed on trucks rebuilt in the company's shops.

THE FRENCH GOVERNMENT has ordered 1,000 gondola cars from the Eastern Car Company and has issued inquiries for 5,835 passenger and freight cars, 1,750 journal boxes, 744,421 kilograms of draw bars, 107 axle boxes, 600,000 kilograms of boiler tubes, 3 locomotive fire boxes and 101,147 kilograms of draft springs.

IRON AND STEEL

THE FLORIDA EAST COAST has ordered 2,200 tons of rails from the Pennsylvania Steel Company.

THE SOUTHERN RAILWAY has ordered 4,000 tons of rails from the Pennsylvania Steel Company.

THE PITTSBURGH & LAKE ERIE has ordered 7,500 tons of steel shapes from the Jones & Laughlin Company.

THE RUSSIAN GOVERNMENT is reported to have ordered 100,000 tons of rails from the Maryland Steel Company.

THE BALTIMORE & OHIO CHICAGO TERMINAL has ordered 149 tons of steel for various buildings at Chicago, from the American Bridge Company.

SIGNALING

THE WABASH has begun the installation of automatic signals between the following points: Danville, Ill., to Williamsport, Ind., and Attica, Ind., to LaFayette, a total of 7½ mi. of double-track and 34 mi. of single-track.

THE ST. LOUIS & SAN FRANCISCO has ordered two electro-mechanical interlocking plants from the Union Switch & Signal Company for installation at Southeastern Junction, Mo., and Nichols, Mo. The former plant will have 13 signals, 7 switches and 6 derails, and the latter will have 19 signals, 6 switches and 9 derails.

Supply Trade News

Samuel D. Fitton has been elected vice-president of the Niles Tool Works Company, Hamilton, Ohio, succeeding George T.

At a meeting of the board of directors of the American Locomotive Company held Wednesday, August 11, J. O. Hobby, Jr., was appointed treasurer.

Allan Strale, consulting engineer of the Inland Steel Company, died of heart disease at his home in Chicago on August 6, at the age of 58 years.

Owen W. Middleton, formerly editor of the *Railway Master Mechanic*, has been appointed publicity manager of the American Steel Foundries, with headquarters in the McCormick building, Chicago.

Simon S. Martin, formerly general superintendent of the Maryland Steel Company, Sparrows Point, Md., has been elected vice-president and a director of the Algoma Steel Corporation. Reiss, deceased.

The Pennsylvania Railroad Co. has asked bids on the construction of sixteen new vessels for use in New York Harbor. These will consist of one steam lighter, three derrick barges and twelve covered hatch barges.

Lewis Littlepage Holladay and Henry Negstad, consulting engineers, have formed a company under the corporate name of Holladay, Negstad & Co., and will specialize in the field of power plants, utilities and industries. They will be located at 109 North Dearborn street, Chicago.

M. A. Evans, western sales manager of the Railway Appliances Company, Chicago, at the time that company was bought by the Q. & C. Company, New York, and with the latter company temporarily during the reorganization period, has resigned. Mr. Evans will take a short vacation before returning to the railway supply business.

The Pratt & Whitney Company has opened an office and showroom at 16 Fremont street, San Francisco, in charge of S. G. Eastman, formerly manager of the Chicago office. A large stock of Pratt & Whitney machinery, small tools and gages will be carried for the convenience of customers, and the office has been appointed agent for the entire Niles-Bement-Pond line of machine tools, cranes, steam hammers, etc.

The Canadian Northern has given the Roberts & Schaefer Company, Chicago, an order to proceed with the building of three frame-constructed, 100-ton capacity, standard counterbalanced bucket coaling plants for installation at Rideau Junction, Ont., Capreol, Ont., and Fitzbach, Ont. This makes seven coaling plants this firm has constructed for the Canadian Northern within a year. The Roberts & Schaefer Company has also received a contract for the Temiskaming & Northern Ontario for a standard counterbalanced bucket locomotive coaling plant for installation at Porquis Junction, Ont.

Willy Lamot, a business man of Antwerp, but now with temporary address at "Shardhighs," Halstead (Essex), England, announces that he has established an organization for the purpose of introducing American products and manufactures into Belgium as soon as the war is over. The headquarters will be in Antwerp. It is Mr. Lamot's intention to engage as agents, representatives or dealers a number of Belgian manufacturers and business men who may have been partly ruined, but will still possess enough capital to be in a position to furnish proper guarantees. His organization will accept the agency for but one make of any one article, and contracts will be for at least two years. The various representatives will be established throughout Belgium, but will be under the supervision of the office at Antwerp.

TRADE PUBLICATIONS

BUILDING CONSTRUCTION.—The Stone & Webster Engineering Corporation, Boston, Mass., has published an attractive booklet showing photographs and essential data concerning projects recently completed by this company, including factory and office buildings, power plants, elevators, etc.

Railway Construction

CAROLINA, ATLANTIC & WESTERN.—See Seaboard Air Line.

CINCINNATI, BLUFFTON & CHICAGO.—Fred A. Dolph has issued a prospectus announcing a plan for the reorganization of this company under the name of the Huntington, Bluffton & Portland Short Line. Plans are being considered for the electrification of the line.

DALLAS & SOUTHWESTERN TRACTION.—J. O. Andrewartha, Dallas, Tex., consulting engineer of the Dallas & Southwestern Traction, is quoted as saying that the company will build from Dallas south to Austin, also that a system of interurban lines will be constructed in that part of Texas. The Dallas & Northwestern Traction, which is owned by the same interests, is planning to build an interurban line from Dallas northwest to Denton, to be operated by gasoline motor cars. E. P. Turner, president; J. T. Witt, chief engineer. (July 30, p. 219.)

DALLAS & NORTHWESTERN TRACTION.—See Dallas & Southwestern Traction.

EDDY LAKE & NORTHERN.—This company has filed an amendment to its charter, it is said, extending the time for ten years in which to complete the line. The proposed route is from Eddy Lake, S. C., north to either Marion or Mullins, about forty miles. G. Officer, secretary. W. M. Burgan, N. James, R. B. Scarborough, Conway, S. C., are interested.

FAIRMONT & HELEN'S RUN.—See Western Maryland.

FLORIDA ROADS (ELECTRIC).—Plans are being made, it is said, to build an electric railway in Clearwater, Fla., and vicinity. E. W. Parker, Tampa, and associates, are back of the project.

Work will soon be started, it is said, on the construction of an electric line from Brooksville, Fla., south to St. Petersburg. James Murphy, St. Petersburg, is interested.

FORT DODGE, DES MOINES & SOUTHERN.—This company will extend its line from Swanwood Junction, Iowa, its present junction with the Chicago, Rock Island & Pacific, to a connection with a leased track of the Des Moines Western. There is about 75,000 cu. yd. of grading, which has been awarded to the Conn Construction Company, Boone, Iowa. Track laying and bridge work will be done by company forces. R. L. Cooper, Boone, Iowa, is chief engineer.

GRAND TRUNK PACIFIC SASKATCHEWAN.—See Grand Trunk Pacific.

GRAND TRUNK PACIFIC.—The Saskatchewan legislature has passed an act extending the time to January, 1917, in which to build a number of branch lines, for which the province has guaranteed the bonds of the Grand Trunk Pacific and of the Grand Trunk Pacific Saskatchewan, and also extends the time within which these companies may build terminals at Regina, Saskatoon and Moose Jaw.

HUNTINGTON, BLUFFTON & PORTLAND SHORT LINE.—See Cincinnati, Bluffton & Chicago.

ILLINOIS CENTRAL.—This company has awarded a contract to the J. D. Lynch Construction Company, Vandalia, Ill., for 35,000 cubic yards of grading at Vandalia. This company has also awarded a contract to H. W. Nelson, Chicago, for 500,000 cubic yards of filling for bridges on the Indiana division.

JACKSON & EASTERN.—This company, it is said, has applied for a charter in Mississippi to build a line from Jackson to Houston, Miss., about 130 miles. The incorporators are S. A. Neville, R. W. Harris and C. J. Currie, of Meridian, Miss. Mr. Neville is vice-president of the Meridian & Memphis, now operating between Meridian, Miss., and Union, which is building an extension from Union to Sebastopol, about 13 miles. (January 29, p. 211.)

LAKE HURON & NORTHERN ONTARIO.—An officer writes denying the report that this company has given a contract to the

National Engineering Company, Cleveland, Ohio, to build the projected line from Sault Ste. Marie to a point on the Grand Trunk Pacific.

LA KEMP & NORTHWESTERN.—A charter has been granted the La Kemp & Northwestern Railway Company of Oklahoma for a line to be constructed from a point on the Atchison, Topeka & Santa Fe, in Ellis county, to a point on the Chicago, Rock Island & Pacific in Texas county, a distance of about 125 miles. The charter also provides for a 20-mile branch line from Ivanhoe to May, Okla. The company is capitalized at \$100,000, and the estimated cost of the proposed line is \$500,000. The incorporators are George C. Walick, I. N. Edwards, J. W. Bell, J. W. Lehman, E. W. Lehman, Theodore Doering and J. D. Key, all of La Kemp.

MERIDIAN & MEMPHIS.—See Jackson & Eastern.

MISSISSIPPI ROADS.—An officer of the Gilchrist-Fordney Lumber Company, Laurel, Miss., writes regarding the report that a logging line is being built from Montrose, Miss., eastward several miles, that the company is only putting in a logging spur. The grading work is finished and the company has already secured the rails and equipment.

MITCHELL STREET & INTERURBAN RAILWAY.—Incorporated in South Dakota with \$200,000 capital to build 30 miles of line at Mitchell, S. D., and near that place. O. E. Cassem, L. E. Cassem, D. N. Hill, A. N. Hill, F. E. Hill, all of Mitchell, are the incorporators.

MORRIS COUNTY TRACTION COMPANY.—This company, it is said, is interested in the organization of another company for the purpose of constructing an electric railway from Landing, N. J., to Lake Hopatcong, through Port Morris to Netcong.

OHIO VALLEY ELECTRIC.—This company has under consideration the question of building an extension, it is said, from Ashland, Ky., north to Russell.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—This company has awarded a contract to Twohy Bros., Portland, Ore., for the construction of its 30-mile extension from Riverside, Ore., to Crane Creek Gap. The estimated cost of the work is \$1,500,000. (July 16, p. 143.)

SCHUYLKILL ELECTRIC.—A contract is reported let to the Trexler Contracting Company, Reading, Pa., to build a section of this line over Broad mountain. The proposed line is to connect Pottsville, Pa., Frackville and Shenandoah.

SEABOARD AIR LINE.—The directors of the Seaboard Air Line have adopted a plan to take over the Carolina, Atlantic & Western, and have authorized the beginning of work on the extension of the C., A. & W. from Charleston, S. C., southwest to Savannah, Ga., 85 miles. See also Railway Financial News.

SOUTHERN RAILWAY.—Contracts have recently been let, it is said, for double-tracking 36 miles of the Southern Railway's main line in North Carolina and in South Carolina.

TOLEDO, ANN ARBOR & JACKSON.—See Toledo-Detroit.

TOLEDO-DETROIT.—This company, formerly the Toledo, Ann Arbor & Jackson, has been authorized by the Public Utilities Commission of Ohio to sell \$523,000 of bonds, to secure funds to complete the line from Toledo, Ohio, northwest to Dundee, Mich.

TUCSON, CORNELIA & GILA BEND.—A contract is reported let to James H. Maxey, Yuma, Ariz., to build from Gila Bend, Ariz., south to Ajo, 44 miles. John C. Greenway, general manager; R. H. Jones, chief engineer of construction, Gila Bend. (May 28, p. 1140.)

VIRGINIA-BLUE RIDGE.—This company, which is building a line from Tye River, Va., northwest via Lowesville to Massies Mill, 22 miles, has completed its line from Tye River as far as Lowesville, 13 miles. (January 29, p. 211.)

WESTERN MARYLAND.—This company has let to A. L. Anderson & Bros., of Altoona, Pa., the contract for the construction of the Fairmont & Helen's Run Railway, which is a company recently incorporated in West Virginia in interest of the Western Maryland. The new line will be about six miles long and will connect the Western Maryland with the Baltimore &

Ohio at a point near Chieftain, W. Va. It will give the Western Maryland a connection with the coal fields of the Consolidation Coal Company in West Virginia. Work is to be begun at once. (July 30, p. 219.)

RAILWAY STRUCTURES

BRATTLEBORO, Vt.—The Central Vermont has given a contract to H. Wales Lines Company, Meriden, Conn., for building a brick and stone station at Bridge street, in Brattleboro. The building is to be three stories high, 52 ft. 4 in. wide, by 183 ft. 6 in. long, and will cost \$70,000.

CHEEKTOWAGA, N. Y.—The Delaware, Lackawanna & Western is making plans to carry out grade crossing elimination work at Cheektowaga.

NEW YORK.—The joint order of the New York Public Service Commissions of the First and Second districts, which requires the elimination of grade crossings on the New York Central and the New York, New Haven & Hartford at Two Hundred and Forty-first street and Two Hundred and Forty-second street, in the borough of the Bronx, as was mentioned in these columns last week, also calls for the construction of a new station at Two Hundred and Forty-first street.

Bids were recently opened by the New York Public Service Commission, First district, for the construction of station finish on Section No. 2 of Routes Nos. 36 and 37, the Astoria line. The lowest bid was submitted by Charles Meads & Company, who offered to do the work for \$268,102.

QUEBEC, Canada.—The new stone and brick passenger station now under construction for the Canadian Pacific at Quebec will include a head house 65 ft. by 142 ft., a concourse 68 ft. by 142 ft., and an express and baggage building 44 ft. by 92 ft. Part of the building will be one story and part two stories. The improvements will cost \$300,000. W. S. Dowling Cook, Montreal, Que., has the contract for the work.

SMITHVILLE, TEX.—The Missouri, Kansas & Texas contemplates the rearrangement and replacement of certain portions of its roundhouse at this place.

SAN ANTONIO, TEX.—The San Antonio Belt Terminal Railway has accepted the franchise granted by the city commission of San Antonio, it is said, for the construction of a system of railway terminals, including new passenger and freight stations in San Antonio. The franchise is for a period of 25 years, and the proposed improvements will cost about \$1,200,000. It is understood that construction work on the terminals will be started within the next two or three months.

ITALIAN RAILWAYS AND THE WAR.—A recent issue of the *Journal des Transports* contains some interesting information relative to the role of the Italian Railways in time of war. During the mobilization the railway service is entirely subject to the military authorities, who regulate the conditions of operation, not only for military transport, but also for ordinary traffic. As soon as mobilization is decreed, a "Direction of Transport" is set up, and the Director of Transport is placed at the head of a special department attached to the general staff. The "Direction" is given an entirely free hand in arranging, modifying and suspending the train services. Operating details are actually entrusted to special military committees attached to the various lines, which exist in times of peace, and are more or less similar to the French *Commissions de réseaux*. Among the duties of the "Direction of Transport" is that of repairing and rebuilding lines and bridges, etc., when necessary, for which purpose it has under its control a special military railway engineering organization. The system planned in times of peace has proved admirably efficient under war conditions. The whole of the mobilization was carried out without suspending the ordinary passenger and freight traffic, and the very few individual trains which were actually suspended were on unimportant sections of line, where a temporarily reduced service was decided on more for economic than for military reasons. The results were really remarkable, since on some sections of line, according to the *Corriere della Sera*, the traffic was increased a hundred-fold. In some instances this enormous increase was handled on lines whose facilities were considered inadequate even for normal traffic requirements. Yet there was not a breakdown, and the military trains arrived punctually.—*Railway Gazette*, London.

Railway Financial News

SEABOARD AIR LINE.—The directors at a meeting in Baltimore on August 9 adopted a comprehensive financial plan looking to a fuller development of this property. The statement given out by S. Davies Warfield says that the plan provides for the following:

"The Seaboard Air Line Railway will be consolidated with the Carolina Atlantic & Western Railway under the corporate name of the Seaboard Air Line Railway Company. The Carolina Atlantic & Western is a recent consolidation of the North & South Carolina, Charleston Northern and South Carolina Western Railroads—operating a total of 416 miles. The Carolina Atlantic & Western recently acquired the Georgetown & Western operating from Lanes to Georgetown, S. C., and from Andrews to the Pee Dee River, S. C., a distance of 70 miles. The Charlestown Northern is the line recently completed connecting the North & South Carolina with Charleston, giving the Seaboard Air Line entrance into Charleston and now becoming a part of the main line of the consolidated system. The new terminals at Charleston are admirable both as to location and facilities.

"The line will be extended from Charleston to Savannah by the immediate construction of 85 miles of railroad with maximum grade of only 3-10 of 1 per cent. This new line will also become part of the main line of the consolidated system.

"This will give the Seaboard Air Line Railway Company—the new company growing out of the consolidation of the above mentioned properties—a low grade line from Hamlet, N. C., to Savannah, Ga. By this new line the Seaboard will reach Georgetown, S. C., Charleston, S. C., and Savannah, Ga., will tap a rich and fertile territory, highly productive in cotton and tobacco, will admit of the Seaboard's running time to the South being shortened, will create a line with maximum grade of only $\frac{1}{2}$ of 1 per cent as compared with $1\frac{1}{2}$ per cent, the maximum grade of the present line to Savannah, and will permit the increase of the freight train load. In effect this will give the Seaboard, through South Carolina, from Hamlet, N. C., to Savannah, Ga., two lines, the other line running via Columbia, each one self-supporting in its own territory, and thus will be obviated the necessity of double-tracking the Hamlet-Columbia line, where traffic is becoming congested. The territory to be opened up between Charleston and Savannah is generally well adapted to the growing of vegetables, corn, rice and sea island cotton and will put the Seaboard immediately into Charleston's heaviest vegetable producing section.

"The Seaboard Air Line Railway Company, the new corporation, will have its first and consolidated mortgage securing an authorized issue of \$300,000,000 bonds of variable interest rates and maturities. This mortgage will be immediately a first lien on the 416 miles of main line track between Hamlet and Savannah, via Charleston, Lanes and Georgetown, S. C., and on the lines running from McBee, S. C., located on the Hamlet-Columbia line, to Florence, Poston, Sumter and Timmonsville, S. C. There will be pledged as collateral under the new mortgage a majority, \$22,361,000, of the outstanding refunding 4 per cent bonds of the Seaboard Air Line Railway.

"There will be presently issued under the new first and consolidated mortgage \$22,893,000 of 6 per cent thirty-year gold bonds; part are to be used in exchange for underlying bonds of constituent properties, the balance has been sold, proceeds to be used for the construction of the new line from Charleston to Savannah, for retirement of equipment trust obligations falling due during the year ending June 30, 1916, for the retirement of the \$6,000,000 three-year notes due March 1, 1916, for the acquisition of certain new property and for improvements and betterments.

"Subject to the carrying out of agreements for the exchange of bonds of the underlying railway properties to be consolidated with the Seaboard Air Line Railway, arrangements have been made for the sale of the bonds of this issue of Series 'A,' as above stated."

ANNUAL REPORT

SIXTY-FIRST ANNUAL REPORT OF THE LEHIGH VALLEY RAILROAD COMPANY

PHILADELPHIA, August 3, 1915.

To the Stockholders of the

LEHIGH VALLEY RAILROAD COMPANY.

The Board of Directors herewith submit the annual report of the business and condition of your Company for the fiscal year ended June 30, 1915.

MILEAGE.

The first track mileage owned or controlled and operated by the Lehigh Valley Railroad Company, the main line of which is double track, extending from Jersey City, N. J., to Buffalo and Suspension Bridge, N. Y., is as follows:

	MILES
Lehigh Valley Railroad Company.....	316.88
Controlled by ownership of entire capital stock.....	938.67
Controlled by ownership of majority of capital stock and lease....	115.37
Operated under lease	27.73
Total mileage operated (owned or controlled).....	1,398.65
Trackage rights over railroads owned by other companies.....	43.71
Total first track mileage.....	1,442.36

In addition to the above there are 594.86 miles, or 41.24 per cent. of second track, 99.51 miles of third track, 44.84 miles of fourth track, and 1,215.76 miles of yard tracks and sidings, a total of 3,397.33 miles of track in operation at the close of the year. A detailed statement of track mileage is shown below. The average number of miles of railway operated for the year was 1,443.52, upon which the mileage statistics in certain tables submitted in this report are based.

The total decrease of 1.38 track miles compared with the preceding year is due, in the main, to the deduction of 1.07 miles of trackage rights, the use of which was discontinued during the year.

OPERATING REVENUES AND EXPENSES.

The following statement sets forth the total revenues and expenses and net revenue from operation for the fiscal year, compared with similar figures for the fiscal year 1914. The complete income account appears on page 24.

The Interstate Commerce Commission having ordered certain further changes in the classification of operating revenues, expenses and income, effective July 1, 1914, it has been necessary, for the purpose of a proper comparison, to re-state the figures for the preceding fiscal year; hence those figures will in many cases be at variance with similar items published in last year's annual report. The principal change is the elimination of Outside Operations, which represent the operations of certain of our water lines, etc., the revenue from which is now included in Operating Revenues and the expenses in Operating Expenses. Similar explanation applies with respect to the classification of various items on the balance sheet which has been changed from the balance sheet published in previous years so as to conform with the accounting requirements of the Commission.

OPERATING REVENUES

FROM	1915	1914	INCREASE	DECREASE
Coal freight	\$19,195,755.50	\$18,528,246.44	\$667,509.06	.....
Merchandise freight	16,005,501.45	15,541,885.90	463,615.55	.....
Passenger	4,043,799.00	4,795,147.44	.....	\$751,348.44
Mail	195,124.81	195,052.87	71.94	.....
Express	449,622.82	443,971.75	5,651.07	.....
Other transportation	2,022,230.85	2,063,650.04	.....	41,419.19
Incidental	613,927.59	602,692.34	11,235.25	.....
Total operating revenues	\$42,525,962.02	\$42,170,646.78	\$355,315.24	.....

OPERATING EXPENSES

	1915	1914	INCREASE	DECREASE
Maintenance of way and structures..	\$4,483,924.72	\$4,674,725.37	.....	\$190,800.65
Maintenance of equipment ...	8,207,491.18	7,669,793.05	\$537,698.13	.....
Traffic expenses..	959,830.08	1,040,594.15	.....	80,764.07
Transportation expenses	15,382,186.83	15,804,058.77	.....	421,871.94
General expenses..	913,954.73	898,733.86	15,220.87	.....
Total operating expenses	\$29,947,387.54	\$30,087,905.20	.....	\$140,517.66
NET OPERATING REVENUE	\$12,578,574.48	\$12,082,741.58	\$495,832.90	.....
Ratio of operating expenses to operating revenues...	70.42%	71.35%	.....	.93%

OPERATING REVENUES.

COAL FREIGHT.

The revenue derived from the transportation of coal and coke amounted to \$19,195,755.50, an increase of \$667,509.06, or 3.60 per cent., as compared with the preceding twelve months.

The percentage of coal freight revenue to total operating revenues was 45.14 per cent., an increase of 1.20 per cent.

The coal and coke transported, excluding the Company's supply coal, was 16,894,930 tons, an increase of 429,982 tons, or 2.61 per cent.

This class of tonnage was 55.82 per cent. of the total tonnage hauled during the year, an increase of .52 per cent.

MERCHANDISE FREIGHT.

The transportation of merchandise freight produced a revenue of \$16,005,501.45, an increase of \$463,615.55, or 2.98 per cent., as compared with the preceding year.

The revenue derived from the transportation of merchandise freight was 37.64 per cent. of the total operating revenues, an increase of .79 per cent. The tonnage moved, excluding Company's material, was 13,373,771 tons, an increase of .49 per cent.

GENERAL FREIGHT.

The total revenue derived from both coal and merchandise freight was \$35,201,256.95, an increase of \$1,131,124.61, or 3.32 per cent., as compared with the preceding twelve months.

The entire freight traffic amounted to 30,268,701 tons, an increase of 495,421 tons, or 1.66 per cent.

The number of tons carried one mile was 5,326,328.902, an increase of 140,128,336 ton miles, or 2.70 per cent.

The average haul was 175.97 miles, an increase of 1.78 miles, or 1.02 per cent.

The average revenue per ton was 116.30 cents, as compared with 114.43 cents last year, an increase of 1.87 cents, or 1.63 per cent.

Company's freight, not included in the above, amounted to 3,073,660 tons, a decrease of 62,095 tons, or 1.98 per cent.

The total freight train mileage was 8,580,867 miles, an increase of 244,295 miles, or 2.93 per cent.

The revenue received per freight train mile was \$4.10, an increase of \$0.01, or .24 per cent.

The average trainload of revenue freight was 620.72 tons, a decrease of 1.38 tons, or .22 per cent. Including Company's freight, the average trainload was 643.62 tons, a decrease of 1.57 tons, or .24 per cent.

PASSENGER.

The earnings received from passenger traffic amounted to \$4,043,799.00, a decrease of \$751,348.44, or 15.67 per cent., compared with the preceding year.

The total number of passengers carried was 5,206,972, a decrease of 522,070, or 9.11 per cent.

The number of passengers carried one mile decreased 49,671,062, or 18.72 per cent.

The average revenue per passenger was 77.66 cents, a decrease of 6.04 cents, or 7.72 per cent.

The average revenue per passenger per mile was 1.875 cents, an increase of .068 cent, or 3.76 per cent.

The average distance traveled by each passenger was 41.42 miles, a decrease of 4.89 miles, or 10.56 per cent.

Passenger train mileage was 4,170,202, a decrease of 225,157 miles, or 5.12 per cent., as compared with a decrease in this revenue of 15.67 per cent.

The average revenue from passengers per passenger train mile was 96.97 cents, a decrease of 12.13 cents, or 11.12 per cent.

MAIL.

The sum of \$195,124.81 was received from the Federal Government for the transportation of United States mail, an increase of \$71.94.

EXPRESS.

The revenue from this class of business amounted to \$449,622.82, an increase of \$5,651.07.

OTHER TRANSPORTATION.

The earnings derived from transportation other than shown under the preceding headings were \$2,022,230.85, a decrease of \$41,419.19.

INCIDENTAL.

Incidental revenue amounted to \$613,927.59, an increase of \$11,235.25.

OPERATING EXPENSES.

MAINTENANCE OF WAY AND STRUCTURES.

The sum of \$4,483,924.72 was expended for the maintenance of way and structures, a decrease of \$190,800.65, or 4.08 per cent., as compared with the preceding year.

A new four-track steel bridge was constructed during the year to replace a double-track steel bridge. Three overhead steel street bridges were raised, in connection with Buffalo Terminal improvements, and additional spans with solid floors were erected. One steel bridge was built in connection with new track construction. Sixteen steel bridges and eleven concrete-steel bridges were placed in the track, replacing light iron or wooden bridges. Three iron and eight wooden bridges were replaced by pipe culverts, and four iron and two wooden bridges were abandoned and the openings filled. One arch culvert was filled and abandoned and four wooden trusses were substantially shortened by filling.

5,535 tons of 110-pound rail, 30,549 tons of 100-pound rail and 45 tons of 90-pound rail, together with necessary frogs, switches, etc., were placed in the track.

1,118,810 tie plates and 193,934 anti-rail creepers were used. 1,001,577 cross ties, 2,842,100 feet B. M. switch ties, 637,471 feet B. M. bridge ties and lumber amounting to 3,511,267 feet B. M. were used.

647,981 of the cross ties, 2,495,412 feet B. M. of switch ties and 596,560 feet B. M. of bridge ties were treated with creosote.

65,612 cubic yards of crushed stone were used in ballasting track. 18,197 feet of drain tile were placed in the roadbed.

334.93 miles of copper and 54.50 miles of iron wire were used in extending and renewing the telephone, telegraph and signal wires on the system.

MAINTENANCE OF EQUIPMENT.

The expenditures for the maintenance of equipment amounted to \$8,207,491.18, an increase of \$537,698.13, or 7.01 per cent., as compared with the preceding twelve months. Included therein is a charge of \$1,426,831.06 for the depreciation of equipment, as required by the accounting rules of the Interstate Commerce Commission.

Ten worn-out locomotives, one passenger car, three express cars, two fruit cars, 572 freight equipment cars and thirteen road service cars were condemned and either sold or destroyed during the year, and their value written off the books by appropriate charges through operating expenses.

Four passenger cars, five express cars, four fruit cars and one combined baggage and mail car were converted into workmen's cars. Eighteen produce cars were converted into ice cars and fifty freight equipment cars were transferred to road service.

Twenty-eight locomotives have been equipped with additional air pumps

and one hundred and fifty-nine with bull's-eye lubricators, to meet the requirements of the Interstate Commerce Commission.

Fifty-six locomotives had new fire boxes applied, one hundred and fifteen were equipped with new cylinders and nine with new boilers.

275 passenger equipment cars were painted and varnished and thirteen equipped with electric lighting apparatus. Three dining cars and five milk cars were equipped with steel underframes.

Steel underframes were applied to 2,286 wooden freight and coal cars, making a total of 14,658 cars so equipped during the last seven years. Five eight-wheel cabooses were equipped with steel underframes. 12,855 freight equipment cars, one passenger equipment car and thirty-six road service cars were equipped with safety appliances to conform to the requirements of the Interstate Commerce Commission.

The total number of locomotives on hand at the close of the year was 945, with a tractive power of 30,234,824 pounds. The total number of freight equipment cars was 45,459, with a capacity of 1,693,578 tons.

TRAFFIC EXPENSES.

The expenditures under this heading amounted to \$959,830.08, a decrease of \$80,764.07, as compared with the preceding twelve months.

TRANSPORTATION EXPENSES.

The cost of conducting transportation was \$15,382,186.83, a decrease of \$421,871.94, or 2.67 per cent., as compared with the preceding year, notwithstanding an increase of .84 per cent. in the total operating revenues.

The ratio of transportation expenses to total operating revenues was 36.17 per cent., a decrease of 1.31 per cent. as compared with the preceding year.

GENERAL EXPENSES.

This class of expenses amounted to \$913,954.73, or 2.15 per cent. of the total operating revenues.

TAXES.

The taxes accrued on your property, capital and business, during the year amounted to \$1,797,379.16, an increase of \$36,967.58 over the preceding year.

ADDITIONS AND BETTERMENTS.

The sum of \$2,974,042.42 was expended during the year for the acquisition of new property and for the improvement and development of existing property, which amount has been charged to Additions and Betterments, as required by the Interstate Commerce Commission. A classified statement of these expenditures appears below. Specific mention is made of the more important expenditures, viz:

The new equipment purchased and added to the property during the year is as follows: Three passenger locomotives, five switching locomotives, two locomotive tenders, thirty steel passenger coaches, ten steel smoking cars, twenty-five steel baggage cars, two 150-ton steam derricks, two Russell snow plows, one caboose, one motor inspection car and one tank car. A portion of this equipment is covered by the Equipment Trust referred to in full under the heading "Financial."

In addition to the foregoing, orders have been placed for ten Pacific type passenger locomotives, five switching locomotives, three locomotive tenders and twenty steel underframe milk cars.

During the past fiscal year fifty-three heavy Consolidation type freight locomotives were rebuilt and equipped with superheaters, new cylinders and Walschaert valve gears. These changes have resulted in a reduced fuel consumption as well as increased efficiency of operation, due to the better sustained steaming qualities of the engines.

Work in connection with the new passenger and freight terminals at Buffalo is progressing favorably. The plans for the buildings were approved, contracts awarded and work commenced on April 14, 1915. It is expected that the freight terminal will be completed and ready for use by November next and the passenger terminal at a later date.

A new open pier 1,060 feet in length and 76 feet in width, equipped with modern ore handling machinery, together with necessary yard tracks, is being constructed at tidewater near Constable Hook, and, when completed, will accommodate steamships of 35-foot draft. The furnaces in the Lehigh Valley region will utilize these facilities for the handling of foreign ores. It is expected that this improvement will be completed early in the spring of 1916.

During the year considerable improvements and additions have been made to the pier stations in the City of New York. A long term lease was concluded with the city for the wharf property on the North River at the foot of Rector Street, and your Company is now constructing thereon a new pier 730 feet long and 75 feet wide, with suitable bulkheads on each side, which will be ready for operation about January 1, 1916. This will enable your Company to dispense with the station facilities at Pier 2, which are no longer adequate. The substructure of the new pier will be of concrete above the low-water line and the superstructure will be of steel, the pier section of which will be one-story and the bulkhead section two stories. Pier 44, East River, located between Gouverneur and Jackson Streets, has also been acquired under a long term lease from the city and will be equipped with a two-story steel shed, primarily intended for the handling of flour, the pier being advantageously located in the center of distribution of that commodity. At the 149th Street station there is now in course of erection a steel building, equipped with automatic sprinkler, for the storage of hay, a commodity which is extensively handled in that locality. At Pier 5, Wallabout, Brooklyn, where your Company previously leased only about one-fourth of the pier, it acquired the entire pier, enlarged the steel shed and installed an automatic sprinkler system. The acquisition of these additional pier facilities will permit your Company to render improved service to its patrons.

A modern steel and concrete ground-level plant for handling coal from cars to boats, with a capacity of 500 cars in ten hours, is being installed at Tift Farm, Buffalo, and will be ready for service early in August. It will be operated by electricity and will consist of two rocking cradles for unloading box cars and four fixed hoppers for unloading open cars. The coal will be conveyed by apron flights to a telescopic chute in the boat. This installation will reduce breakage of coal to a minimum, will eliminate all fire risk now incident to the high wooden trestle and also reduce the cost of maintenance.

66,422 feet, of 12.58 miles, of Company's sidings, and 15,787 feet, or 2.99 miles, of industrial sidings, were constructed during the year.

To avoid surface disturbances by reason of mine workings of one of the large anthracite mining companies, a change of line was completed between Espy Run and Newport, a distance of 1.2 miles. In making this change 82 degrees of curvature were eliminated, including a double reverse curve of 6 and 8 degrees respectively.

The car repair yard at Coxton is being relocated in order to provide additional room necessary for car repairs and at the same time to permit of the use of the old car repair tracks for the enlargement of the classification yard. About 8,000 feet of track have been constructed in this connection. The yards at South Plainfield, Perth Amboy and Oak Island were enlarged, resulting in increased capacities of 41, 174 and 32 cars respectively.

A new fifty-stall fireproof enginehouse, together with a 100-foot electrically operated turntable, is in course of construction at Sayre.

A concrete freight house was erected at Lehighton. Dwelling houses of hollow tile and stucco construction, for the accommodation of foremen and laborers, were constructed at Flemington Junction, Ashmore and Phelps. Extensive improvements were made to the Company dwelling houses at Delano and to the milk shipping stations at West Portal, Tioga Centre and Wysox. A frame shelter was erected at Weequahic Park, Newark, for the accommodation of incoming passengers waiting for trolley cars. In the waiting rooms of the Wilkes-Barre passenger station a new marbleoid floor was laid and new seating accommodations and electric light fixtures were installed.

A new 46-foot track scale was installed at South Plainfield.

Eleven gasoline motor cars were purchased for use of section, bridge, signal and telegraph gangs, making a total of 110 now in service.

The improvements in connection with the water supply at Lehighton and Packerton, comprising the construction of a reservoir of five million gallons capacity on Beaver Run and a dam across Mahoning Creek, together with electric pumping machinery and connecting pipe lines, which will afford an independent and ample supply of water for the locomotives and shops at those points, referred to in last year's report, are about one-half completed. A new water station with a 52,500-gallon steel standpipe supplied by gravity was established at Sheldrake Springs.

Automatic disc signals between Slatington and Penn Haven Junction, a distance of 21.3 miles, were replaced with three-position upper-quadrant signals, and the automatic disc signals between Laceyville and Wilkes-Barre, a distance of 49.1 miles, have been renewed with two-position lower-quadrant signals. Extensive improvements were made to the mechanical interlocking plant at Pine Junction.

Visible and audible crossing signals were installed at the following points: Morley's Crossing, east of Athens; Stanton; Clinton Avenue, South Plainfield; Colfax Avenue and Walnut Street, Roselle Park; Manville, and Lexington Avenue, Picton.

During the year thirty-five portable telephones were installed on freight and passenger trains, making a total of 720 in service, which completes the work of equipping trains. The purpose of these telephones is to enable train crews to communicate immediately with the proper officers in case of accident or unusual delay.

New telegraph and telephone pole lines were erected for a distance of 4.50 miles on the Mahanoy and Hazleton Division, .83 of a mile on the Seneca Division, and 2.50 miles on the Buffalo Division. Telegraph and telephone lines were rebuilt for a distance of 9.68 miles on the New Jersey and Lehigh Division, 2.10 miles on the Mahanoy and Hazleton Division, 23.85 miles on the Wyoming Division, and 21 miles on the Buffalo Division. Poles were rest for a distance of 23.90 miles on the New Jersey and Lehigh Division, 19.70 miles on the Mahanoy and Hazleton Division, and 6.60 miles on the Wyoming Division.

FINANCIAL.

No capital obligations have been issued and sold by your Company during the fiscal year.

The following obligations matured and were retired during the year:

DESCRIPTION	INTEREST RATE	MATURITY	AMOUNT
Collateral Trust Bonds.....	4%	Feb. and Aug.	\$1,000,000
Equipment Trust, Series I, Certificates..	4%	September	400,000
Equipment Trust, Series J, Certificates..	4½%	Mar. and Sept.	500,000
Equipment Trust, Series K, Certificates..	4%	Mar. and Sept.	300,000
Equipment Trust, Series L, Certificates..	4½%	April and Oct.	400,000
Equipment Trust, Series M, Certificates..	4½%	March	200,000
Total.....			\$2,800,000

Thus far the improvements which have been made in connection with the new freight and passenger terminals at Buffalo, referred to elsewhere in the report, have been financed out of the current cash resources of the Company. It is proposed, however, at a later date to make a specific issue of bonds to cover the major portion of this expenditure. Accordingly a new company has been incorporated, known as the Lehigh-Buffalo Terminal Railway Corporation, which will take title to the real estate and make all the improvements incident to the construction of the terminals. Application is now pending before the Public Service Commission of New York State for authority to have the terminal corporation issue to the Lehigh Valley Railroad Company Fifty-Year Five Per Cent. Gold Debenture Bonds for such moneys as have been and will be advanced to it for this purpose. These bonds, when received, will be placed in the treasury of your Company. All of the real estate which was acquired by your Company and its subsidiaries is now being transferred to the new company.

The Equipment Trust, known as Series M, covering an issue of \$1,800,000 Four and One-Half Per Cent. Certificates, which was authorized last year, as mentioned in that annual report, has been completed and the certificates are now in the Company's treasury. The same mature in annual installments of \$200,000 on March 1st of each year, the last installment being due on March 1, 1923. The \$200,000 which matured March 1, 1915, were duly cancelled. This trust is a lien upon one thousand self-clearing double hopper steel coal cars of 100,000 pounds capacity each, sixty-five steel passenger coaches, twenty-five steel baggage and express and ten steel smoking cars.

The advances made by the Lehigh Valley Railroad Company to subsidiary companies, of which it owns the entire capital stock, were reimbursed by the issuance of Fifty-Year Five Per Cent. Gold Debenture Bonds as follows:

The Lehigh Valley Rail Way Company.....	\$380,000
Lehigh Valley Railroad Company of New Jersey.....	240,000
Pennsylvania and New York Canal and Railroad Company..	145,000
National Storage Company.....	80,000

These securities have been deposited with the Trustee of the General Consolidated Mortgage, as required by the terms of that mortgage.

To reimburse your Company for advances made to it for capital expenditures, the Wyoming Valley Water Supply Company has issued \$80,000 First Mortgage Five Per Cent. Bonds which have been received and placed in the treasury.

The book value of the capital stock of Cox Brothers & Company, Incorporated, has been reduced by the sum of \$1,000,000, and Profit and Loss charged with that amount, as has been the practice in preceding years.

There has been a reduction in the book value of the capital stock of the Temple Iron Company as a result of the liquidation of its anthracite business following the decree of the Supreme Court of the United States.

Material and Supplies on hand at the close of the year amounted to \$2,906,007.63, a decrease of \$467,253.15.

Current Assets are \$8,097,354.72 in excess of Current Liabilities.

Four quarterly dividends of two and one-half per cent. each on the preferred and common capital stocks of the Company were declared and paid during the year.

The cash and security balances of the Company for the year have been verified by certified public accountants and a copy of their certificate as to the correctness of the same is given on page 19.

GENERAL REMARKS.

Your Company has pursued a fairly aggressive policy in the matter of expenditures for the development and improvement of its property. The appropriations for the year were also very liberal for the maintenance of the permanent way and equipment. In fact, it will be observed by reference to the statement of operating expenses, that the total maintenance appropriations have been somewhat in excess of the preceding year, noticeably so in the case of equipment. Your Board of Directors believed it to be for the best interests of the stockholders to pursue this policy of liberal maintenance and conservative development for the future, notwithstanding the fact that the revenues were somewhat affected during part of the fiscal year as a result of the disturbed business and financial condition of the country resulting from the European situation.

The attention of the stockholders is again called to the tax accruals which are steadily increasing, and at a rate out of all proportion to the increase in revenues. The total taxes now amount to 4.23 per cent. of your Company's gross operating revenues. In the last ten years operating revenues have increased 29.69 per cent., while taxes have increased 154.21 per cent.

Five new covered barges were received during the year and added to the floating equipment of the Lehigh Valley Transportation Company, the entire capital stock of which is owned by your Company. One tug, fully covered by insurance, was lost at sea. One steam lighter, two cattle boats and six barges which, on account of age and capacity, became undesirable for further service, were condemned and sold.

The Interstate Commerce Commission rendered a decision in the month of May, 1915, under the so-called Panama Canal act, the effect of which, unless the decision can be modified, will be to compel the Lehigh Valley Railroad Company to cease the operation of six steamers owned by the Lehigh Valley Transportation Company and now operated upon the Great Lakes. These vessels have for years been operated in miscellaneous freight service and served as valuable feeders from western points to your Company's lines which end at Buffalo. The decision of the Commission does not require the discontinuance of these operations until December 1, 1915. The matter is one of grave concern to your Company and is now occupying the earnest attention of its officers.

Your Company has seventeen men engaged in the preparation of data and collection of records in connection with the valuation of the Company's property, for use by the Interstate Commerce Commission, as required by law, and this force will have been increased as the work progresses.

The passenger stations at Waterloo and Seneca Falls and the passenger train service between Geneva and Seneca Falls were discontinued as of October 1, 1914. This discontinuance was consented to by the Public Service Commission of New York State upon proof being furnished to it that the service was being rendered at a loss to your Company and that the communities interested were being well served otherwise.

Upon petition of the Board of Trade of Irvington the Board of Public Utility Commissioners of New Jersey ordered your Company, effective January 29, 1915, to operate three passenger trains on the Irvington Branch in connection with three main line trains to and from Jersey City. The receipts from this service were so hopelessly inadequate in meeting the expense of operation that the Board of Public Utility Commissioners consented to the withdrawal of the service as of June 22, 1915.

The operation of the Lehigh and New York Railroad for the year under review resulted in a loss of \$225,826.13. The property of that Company is leased and operated by your Company under an agreement made in 1895.

Sixty new industries were located on the system during the year, of which fifty have direct track connections with your Company's lines.

Total payments direct to labor for the year amounted to \$16,834,699.53, or 56.21 per cent. of the total operating expenses, the same having been distributed among an average of 20,173 employees.

The contribution made by your Company to its Employees' Relief Fund amounted to \$59,989.38.

The officers and employees are thanked for their loyal and faithful services rendered during the year.

E. B. THOMAS, President.

COMPARATIVE INCOME ACCOUNT FOR THE YEARS ENDED JUNE 30, 1915 AND 1914

OPERATING REVENUES:—		1915	1914	INCREASE OR DECREASE
Coal freight revenue.....	\$19,195,755.50	\$18,528,246.44	\$667,509.06	
Merchandise freight revenue.....	16,005,501.45	15,541,885.90	463,615.55	
Passenger revenue.....	4,043,799.00	4,795,147.44	—\$751,348.44	
Mail revenue.....	195,124.81	195,052.87	71.94	
Express revenue.....	449,622.82	443,971.75	5,651.07	
Other transportation revenue.....	2,022,230.85	2,063,650.04	—41,419.19	
Incidental revenue.....	613,927.59	602,692.34	11,235.25	
Total operating revenues.....	\$42,525,962.02	\$42,170,646.78	\$355,315.24	
OPERATING EXPENSES:—				
Maintenance of way and structures.....	\$4,483,924.72	\$4,674,725.37	—\$190,800.65	
Maintenance of equipment.....	8,207,491.18	7,669,793.05	\$537,698.13	
Traffic expenses.....	959,830.08	1,040,594.15	—80,764.07	
Transportation expenses.....	15,382,186.83	15,804,058.77	—421,871.94	
General expenses.....	913,954.73	898,733.86	15,220.87	
Total operating expenses.....	\$29,947,387.54	\$30,087,905.20	—\$140,517.66	
Ratio of operating expenses to operating revenues..	70.42%	71.35%	.93%	
Net operating revenue.....	\$12,578,574.48	\$12,082,741.58	\$495,832.90	
RAILWAY TAX ACCRUALS.....	\$1,689,109.33	\$1,659,280.99	\$29,828.34	
UNCOLLECTIBLE RAILWAY REVENUES.....	14,781.88	.....	14,781.88	
Total tax accruals, etc..	\$1,703,891.21	\$1,659,280.99	\$44,610.22	
OPERATING INCOME.....	\$10,874,683.27	\$10,423,460.59	\$451,222.68	
OTHER INCOME:—				
Hire of equipment—Credit balance.....	\$68,807.74	\$325,440.01	—\$394,247.75	
Joint facility rent income.....	325,579.07	402,957.70	—77,378.63	
Dividend income.....	712,998.77	*1,241,034.58	—528,035.81	
Income from funded securities.....	428,027.08	423,060.00	\$4,967.08	
Miscellaneous income.....	544,414.27	624,197.19	—79,782.92	
Total other income.....	\$1,942,211.45	\$3,016,689.48	—\$1,074,478.03	
TOTAL INCOME.....	\$12,816,894.72	\$13,440,150.07	\$623,255.35	

†Debit balance.

*Includes dividend of \$685,080.00 on capital stock of Temple Iron Co.

GENERAL BALANCE SHEET, JUNE 30, 1915.

Dr. ASSETS.		LIABILITIES.		Cr.
INVESTMENT IN ROAD AND EQUIPMENT:—		CAPITAL STOCK:—		
Investment in road.....	\$24,064,145.93	1,210,034 shares common stock, par \$50	\$60,501,700.00	
Investment in equipment.....	55,699,182.97	2,126 shares preferred stock, par \$50	106,300.00	
				\$60,608,000.00
Less reserve for accrued depreciation..	\$79,763,328.90			
	8,371,409.12			
	\$71,391,919.78	FUNDED DEBT:—		
INVESTMENT IN MISCELLANEOUS PHYSICAL PROPERTY.....	4,770,573.52	Mortgage bonds.....	\$77,639,000.00	
INVESTMENTS IN AFFILIATED COMPANIES:—		Collateral trust bonds.....	11,000,000.00	
Stocks.....	\$46,988,785.27	Equipment trust obligations.....	6,200,000.00	
Bonds.....	26,815,926.00	Mortgage on real estate.....	1,669.18	
Notes.....	353,750.00			
Advances.....	229,510.12	Less securities held in treasury of the Company.....	19,073,000.00	
	74,387,971.39			75,767,669.18
OTHER INVESTMENTS:—		CURRENT LIABILITIES:—		
Stocks.....	\$252,860.00	Traffic and car-service balances payable..	\$89,829.37	
Bonds.....	34,000	Audited accounts and wages payable....	3,218,038.42	
Miscellaneous.....	306,839.00	Miscellaneous accounts payable.....	202,047.56	
	593,699.00	Interest matured unpaid.....	403,986.75	
CURRENT ASSETS:—		Dividends matured unpaid.....	4,197.25	
Cash.....	\$9,177,789.11	Unmatured dividends declared.....	1,515,200.00	
Traffic and car-service balances receivable	133,082.01	Unmatured interest accrued.....	558,568.47	
Net balance receivable from agents and conductors.....	984,744.39	Unmatured rents accrued.....	355,980.77	
Miscellaneous accounts receivable.....	1,315,537.70	Other current liabilities.....	476,185.13	
Material and supplies.....	2,906,007.63			6,824,033.73
Interest and dividends receivable.....	199,397.85	DEFERRED LIABILITIES.....		1,366,223.89
Other current assets.....	204,829.76			
	14,921,388.45	UNADJUSTED CREDITS:—		
DEFERRED ASSETS.....	1,321,493.28	Tax liability.....	\$450,787.01	
UNADJUSTED DEBITS:—		Other unadjusted credits.....	496,468.13	
Rents and insurance premiums paid in advance.....	\$140,396.49			947,255.14
Other unadjusted debits.....	1,678,456.91			23,692,716.88
	1,818,853.40	PROFIT AND LOSS.....		
TOTAL ASSETS.....	\$169,205,898.82	TOTAL LIABILITIES.....		\$169,205,898.82

NOTE:—The Interstate Commerce Commission issued an order, effective July 1, 1914, requiring the reclassification of balance sheet accounts and, accordingly, the balance sheet has been rearranged to conform thereto.

DEDUCTIONS FROM INCOME:—

Interest on funded debt.....	\$3,459,738.48	\$3,308,428.49	\$151,309.99
Rent for leased roads....	2,131,795.00	2,212,420.00	—\$80,625.00
Joint facility rents.....	208,613.37	210,322.40	—1,709.03
Miscellaneous rents.....	526,985.22	514,084.51	12,900.71
Miscellaneous tax accruals	108,269.83	101,130.59	7,139.24
Miscellaneous deductions..	59,047.86	37,104.39	21,943.47
Total deductions from income	\$6,494,449.76	\$6,383,490.38	\$110,959.38
NET INCOME	\$6,322,444.96	\$7,056,659.69	—\$734,214.73

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED
JUNE 30, 1915.

	Dr.	Cr.
Balance, July 1, 1914.....		\$23,898,683.75
Net income for year ended June 30, 1915..		6,322,444.96
Adjustments account distribution of cost of sundry real estate purchased in prior years.		574,236.34
Miscellaneous adjustments.....		7,402.13
Reduction of book value of capital stock of Coxie Brothers & Co., Inc.....	\$1,000,000.00	
Property abandoned	49,250.30	

THE LEHIGH VALLEY COAL COMPANY

REPORT OF OPERATIONS.

PHILADELPHIA, August 2, 1915.

The annual report of the operations conducted by The Lehigh Valley Coal Company for the fiscal year ended June 30, 1915, and statements indicating its financial condition at the close of the year, are herewith submitted.

The conditions in the anthracite trade have not been very satisfactory because of the mild weather which has prevailed during the past several winters. While the tonnage mined shows a slight increase over the preceding year, all of the increase was made in the first six months. The second half of the year shows a decrease as compared with the same period a year ago.

The total net income of the Company from all sources, after deducting charges for royalties, sinking funds, depreciation of the property and interest on the funded debt, amounted to \$1,022,814.91, an increase of \$457,955.47 as compared with the preceding year.

The production of anthracite coal from the lands owned and leased by The Lehigh Valley Coal Company, including that mined by tenants, was 8,088,901 gross tons, an increase of 211,511 tons.

The percentage of sizes above pea produced by the mining operations of the Company was 65.41 per cent., a decrease of 1.05 per cent.

The number of breaker hours worked was 42,085, an increase of 867 hours.

The bituminous coal mined from the Snow Shoe lands, located in Centre County, Pennsylvania, amounted to 258,205 gross tons, an increase of 5,474 tons.

The property of the Company was fully maintained during the year and \$517,542 was expended for additions and betterments.

The steel fireproof breaker at Packer No. 5 colliery, referred to in the last annual report, was completed and is now in successful operation. Other improvements at this colliery, including a substantial addition to the boiler plant and a new steel headframe over the shaft, have been completed, and a new steel fireproof ventilating fan is now in course of construction. At Packer No. 4 colliery the alterations to the breaker and the concentration of the underground pumping are well under way and will be completed during the coming year.

An addition to the boiler plant at Dorrance colliery has been made to provide the increased amount of steam required because of the extension of underground operations.

Prospecting on the Broadwell lands in Lackawanna County is now under way with a view to commencing mining operations thereon and taking the coal to Heidelberg colliery for preparation.

To reduce still further the risk of destruction by fire, a complete spray system was introduced at each of the frame breakers and, as a result of tests made under the observation of representatives of the insurance companies, a substantial reduction was made in the premiums paid for fire insurance.

DIVIDENDS:—

Two and one-half per cent. on preferred stock, paid Oct. 10, 1914.....	\$2,657.50	
Two and one-half per cent. on common stock, paid Oct. 10, 1914.....	1,512,542.50	
Two and one-half per cent. on preferred stock, paid Jan. 9, 1915.....	2,657.50	
Two and one-half per cent. on common stock, paid Jan. 9, 1915.....	1,512,542.50	
Two and one-half per cent. on preferred stock, paid April 10, 1915.....	2,657.50	
Two and one-half per cent. on common stock, paid April 10, 1915.....	1,512,542.50	
Two and one-half per cent. on preferred stock, due July 10, 1915.....	2,657.50	
Two and one-half per cent. on common stock, due July 30, 1915.....	1,512,542.50	
	6,060,800.00	
Balance, June 30, 1915.....	23,692,716.88	
	\$30,802,767.18	\$30,802,767.18
Balance brought forward, July 1, 1915.....		\$23,692,716.88

The operations on the bituminous coal lands at Snow Shoe are being steadily developed to permit of greater efficiency. As soon as the power line, now under construction, is completed, electric haulage will be substituted for mules and electric coal cutting machinery will be introduced in place of pick mining.

The properties at West Harrison Street, Chicago, and Fillmore Avenue, Buffalo, which were no longer required in the conduct of the Company's business, were sold during the year.

Included in the cash on hand is the sum of \$678,085 representing an amount set aside on account of the special tax levied by the State of Pennsylvania of two and one-half per cent. of the value of the coal mined. The constitutionality of this law has not as yet been decided by the courts.

No new capital obligations have been issued during the year. By action of the Sinking Fund \$404,000 Delano Land Company First Mortgage Five Per Cent. Bonds were purchased and canceled during the year. The retirement of these bonds will result in a reduction of \$20,200 per annum in the fixed charges of the Company.

The obligations appearing on the balance sheet as "Deferred Real Estate Payments," representing short term notes given for the purchase of property in prior years, have been reduced by the sum of \$100,000.

Payments amounting to \$112,804 were made to the sinking funds of the various mortgages on the Company's property.

Current Assets are \$3,521,901 in excess of Current Liabilities.

The books and accounts of the Company have been verified by certified public accountants and a copy of their certificate as to the correctness thereof appears on page 9.

By order of the Board of Directors.

F. M. CHASE,
Vice-President and General Manager.PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED
JUNE 30, 1915.

	Dr.	Cr.
Credit balance, July 1, 1914.....		\$4,225,685.28
Net income for year ended June 30, 1915....		1,022,814.91
Adjustment of Pennsylvania State Taxes....	\$67,126.51	
Miscellaneous adjustments	73,359.12	
Balance, June 30, 1915.....	5,108,014.56	
	\$5,248,500.19	\$5,248,500.19
Credit balance brought forward, July 1, 1915.....		\$5,108,014.56

GENERAL BALANCE SHEET, JUNE 30, 1915.

ASSETS.		LIABILITIES.	
PROPERTY AND PLANT.....	\$24,969,596.83	CAPITAL STOCK	\$1,965,000.00
SECURITIES OWNED	200,000.00	FUNDED DEBT	19,892,000.00
ADVANCES FOR COAL MINING RIGHTS.....	4,465,730.06	CURRENT LIABILITIES:—	
SINKING FUNDS IN HANDS OF TRUSTEES.....	2,570,393.71	Audited vouchers	\$570,862.06
INSURANCE FUND	133,465.59	Wages due and unpaid.....	517,704.62
CURRENT ASSETS:—		Due to individuals and companies.....	45,855.55
Cash on deposit.....	\$4,178,948.66	Royalties on coal mined, due lessors.....	40,602.31
Materials and supplies.....	321,829.72	Interest on funded debt, due July 1, 1915..	303,800.00
Notes receivable	4,000.00	Interest on funded debt, accrued, not due..	100,000.00
Due from individuals and companies.....	1,700,743.66	Interest due on funded debt, unclaimed....	5,000.00
	6,205,522.04	Taxes due and accrued.....	1,099,796.35
DEFERRED AND SUSPENDED ASSETS.....	238,175.13		2,683,620.89
		DEFERRED AND SUSPENDED LIABILITIES:—	
TOTAL ASSETS	\$38,782,883.36	Deferred real estate payments.....	\$600,000.00
		Miscellaneous	149,717.42
			749,717.42
		RESERVE ACCOUNTS:—	
		Depreciation and other reserves.....	8,384,530.49
		PROFIT AND LOSS.....	5,108,014.56
		TOTAL LIABILITIES	\$38,782,883.36